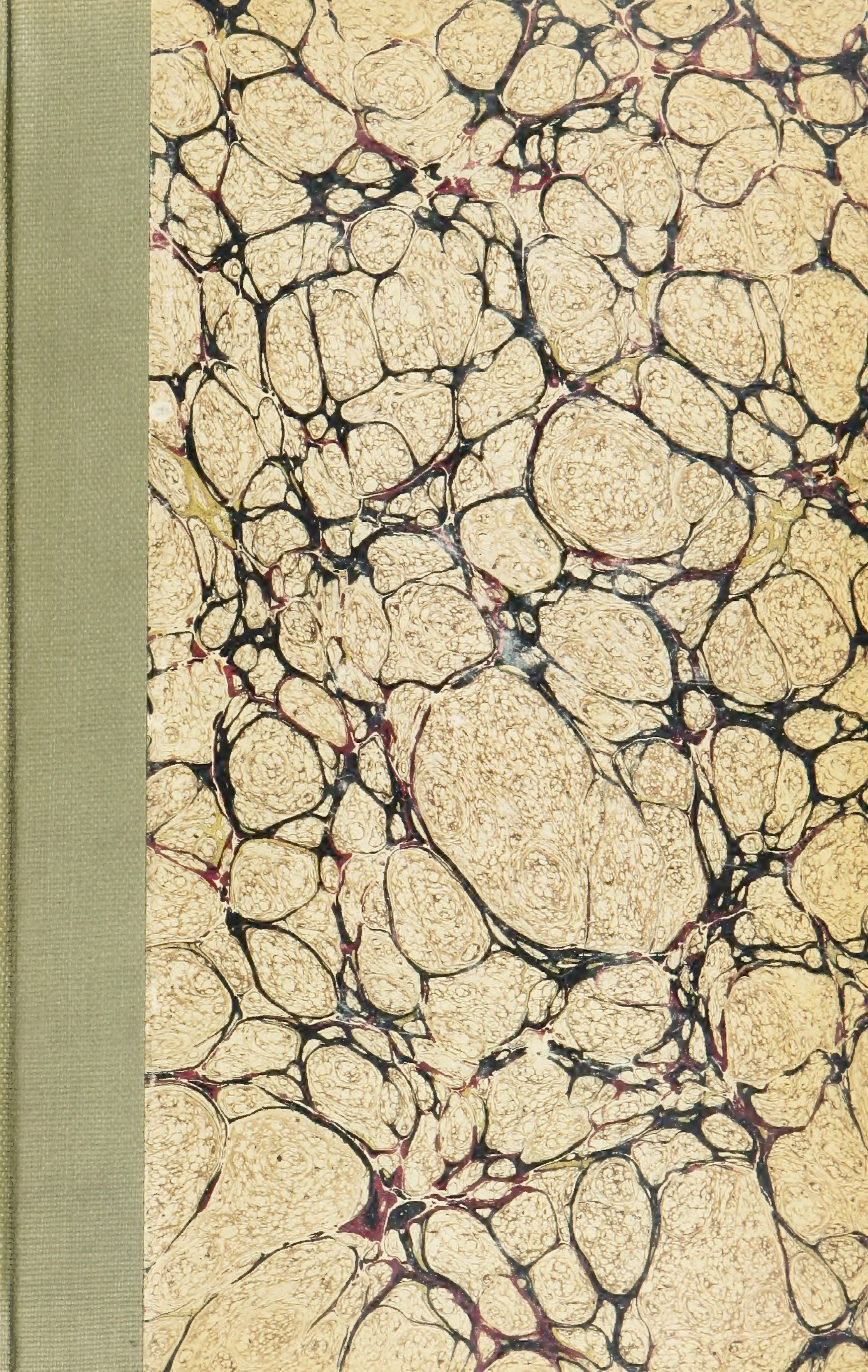

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GEOLOGICAL AND NATURAL HISTORY SURVEY OF MINNESOTA
CONWAY MACMILLAN, *State Botanist*

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THE METASPERMAE OF THE MINNESOTA VALLEY

A LIST OF THE HIGHER SEED-PRODUCING PLANTS INDIGENOUS TO THE DRAINAGE-BASIN OF THE MINNESOTA RIVER

BY

CONWAY MACMILLAN

REPORTS OF THE SURVEY
BOTANICAL SERIES

I

DECEMBEER 29, 1892
MINNEAPOLIS, MINNESOTA

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STATE PRINTERS
MINNEAPOLIS, MINNESOTA

LETTER OF TRANSMITTAL

The University of Minnesota, Minneapolis, Minn.
April 29th, 1892.

HON. JOHN S. PILLSBURY,
President of the Board of Regents of the University,

SIR:—I have the honor to present through you to the Board of Regents of the University of Minnesota, my first report as botanist of the Geological and Natural History Survey of Minnesota.

I am, sir,
your obedient servant,
CONWAY MACMILLAN,
State Botanist.

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TABLE OF CONTENTS.

Preface xi
Introduction 1
The work of a botanical survey 1
Importance of studying a natural area 2
The Minnesota valley as a natural area 3
History of botanical investigation in the Minnesota valley 4
Bibliographical list of publications relating to the plants of Minnesota 5
Care and identification of material 9
Citation of herbarium specimens 9
Determination of ranges outside of Minnesota 10
Citation of generic and family ranges 10
Citation of authors of genera and species 11
Synonymy and orthography 13
Citation of genera and families 15
Generic synonymy and limitation 16
Arrangement of families and genera 18
Natural divisions of the vegetable kingdom 18
Characters of the Metaspermae 22
Characters of the Archispermae 23
The production of "seeds" 24
The classification of Engler and Prantl 24
Subdivisions of the Metaspermae 27
Literature bearing upon metaspermic polymorphism 29
Statistical discussions 30
List of higher seed-producing plants (Metaspermae) native to the valley of the Minnesota 31
Monocotyledones 31
I. Typhaceae 31
II. Sparganiaceae 32
III. Potamogetonaceae 33
IV. Najadaceae 40
V. Juncagineae 41
VI. Alismaceae 42
VII. Hydrocharitaceae 45
VIII. Gramineae 47
IX. Cyperaceae 89
X. Aroideae 130
XI. Lemnaceae 132
XII. Xyridaceae 135
XIII. Eriocaulaceae 135

XIV. Commelinaceae 136
XV. Pontederiaceae 137
XVI. Juncaceae 138
XVII. Liliaceae 143
XVIII. Amaryllidaceae 159
XIX. Dioscoreaceae 159
XX. Iridaceae 160
XXI. Orchidaceae 162
Dicotyledones—Archichlamydeae 176
XXII. Juglandaceae 176
XXIII. Myricaceae 178
XXIV. Salicaceae 179
XXV. Betulaceae 186
XXVI. Fagaceae 190
XXVII. Ulmaceae 192
XXVIII. Moraceae 195
XXIX. Urticaceae 196
XXX. Santalaceae 199
XXXI. Aristolochiaceae 201
XXXII. Polygonaceae 203
XXXIII. Chenopodiaceae 211
XXXIV. Amarantaceae 213
XXXV. Phytolaccaceae 215
XXXVI. Nyctaginaceae 216
XXXVII. Portulacaceae 217
XXXVIII. Caryophyllaceae 219
XXXIX. Nymphaeaceae 225
XL. Ceratophyllaceae 229
XLI. Ranunculaceae 229
XLII. Berberidaceae 250
XLIII. Menispermaceae 251
XLIV. Papaveraceae 252
XLV. Cruciferae 256
XLVI. Capparidaceae 269
XLVII. Sarraceniaceae 271
XLVIII. Droseraceae 271
XLIX. Crassulaceae 273
L. Saxifragaceae 274
LI. Rosaceae 281
LII. Leguminosae 308
LIII. Geraniaceae 332
LIV. Oxalidaceae 334
LV. Linaceae 335
LVI. Rutaceae 336
LVII. Polygalaceae 338
LVIII. Euphorbiaceae 340
LIX. Stellariaceae 344
LX. Anacardiaceae 345
LXI. Celastraceae 348
LXII. Aquifoliaceae 349
LXIII. Staphyleaceae 350

LXIV. Aceraceae 351
LXV. Balsaminaceae 354
LXVI. Rhamnaceae 355
LXVII. Vitaceae 357
LXVIII. Tiliaceae 359
LXIX. Malvaceae 360
LXX. Hypericaceae 362
LXXI. Cistaceae 364
LXXII. Violaceae 365
LXXIII. Cactaceae 371
LXXIV. Thymelaeaceae 372
LXXV. Elaeagnaceae 373
LXXVI. Lythraceae 374
LXXVII. Oenotheraceae 375
LXXVIII. Halorrhagidaceae 383
LXXIX. Araliaceae 385
LXXX. Umbelliferae 387
LXXXI. Cornaceae 369
Dicotyledones—Metachlamydeae 402
LXXXII. Pirolaceae 402
LXXXIII. Ericaceae 405
LXXXIV. Primulaceae 411
LXXXV. Oleaceae 415
LXXXVI. Gentianaceae 417
LXXXVII. Apocynaceae 421
LXXXVIII. Asclepiadaceae 422
LXXXIX. Convolvulaceae 427
XC. Polemoniaceae 431
XCI. Hydrophyllaceae 434
XCII. Borraginaceae 436
XCIII. Verbenaceae 442
XCIV. Labiatae 444
XCV. Solanaceae 456
XCVI. Scrophulariaceae 459
XCVII. Lentibulariaceae 473
XCVIII. Orobanchaceae 475
XCIX. Plantaginaceae 476
C. Rubiaceae 478
CI. Caprifoliaceae 482
CII. Adoxaceae 490
CIII. Valerianaceae 491
CIV. Cucurbitaceae 493
CV. Campanulaceae 494
CVI. Compositae 499
Summary 570
THE VALLEY OF THE MINNESOTA RIVER 571
  Location of the valley 571
  General topographical features 572
  Character of the basin 573
  Distribution of forest and prairie 574
  Soils 575

Climate 576
Tables of precipitation 576, 577
Table of temperature 577
Phaenological observations 578
Geological history of the Minnesota valley 578
Bibliography 581
RELATIONSHIPS OF THE METASPERMIC FLORA OF THE MINNESOTA VALLEY 582
Statement of the problems 582
The dynamic inter-relations of plants 582
General features of plant distribution 584
The general factors in floral differences 587
Natural vegetation regions of the earth 588
Grisebach 588
Engler 588
Drude 590
General position of the Minnesota valley as a botanical district 591
Greater compositeness of the Northern Realm 591
Pressures and tensions 594
General considerations of equatorial pressure 594
Movement of tensions 595
Fluctuation of tensions 596
Influence of equatorial pressure on habitat 597
Secondary longitudinal tensions 598
Minor tensions 599
General division of the world into botanical realms 600
Outline of metaspermic history in the northern hemisphere 600
Emergence of metaspermic forms 600
Character of the Cretaceous flora 602
The Tertiary flora 603
The post-Tertiary movement 604
Results of the epoch of glaciation 606
Conditions of the present 610
Summary 610
Bibliography 612
STATISTICS OF METASPERMIC PLANTS OF THE MINNESOTA VALLEY 613
Value of statistics 613
Point of view of statistical compilation 614
Points of statistical investigation 615
I. Examination of families represented in the Minnesota valley 624
A. Table illustrating distinctive range of families 618
II. Examination of genera represented in the Minnesota valley 624
B. Table illustrating distinctive range of genera 624
C. Table illustrating continental development of genera 643
III. Examination of species represented in the Minnesota valley 653
D. Table illustrating general continental range of Minnesota Metaspermic species 654
E. List of species and varieties of extra-continental range 724
F. Table illustrating range by families and species 736

IV. Examination of physiognomic characters of the metaspermic plants of the Minnesota valley 738
G. Table of arboreal Metaspermae 739
H. Table of shrubby Metaspermae 740
I. Table of aquatic Metaspermae 743
K. Table of swamp and marsh Metaspermae 744
V. Examination of the dominant metaspermic families of the Minnesota valley 752
VI. Conclusion 758
INDEX OF THE LIST 761

ERRATA.

p. 64. For **arundiuacea** *read* **arundinacea.**
p. 343. For *presslii read preslii.*
p. 441: For var. **pilosum** *read* var. **pilosa.**

PREFACE.

The Geological and Natural History Survey of Minnesota is established by virtue of an act of the state legislature, approved March 1, 1872. This act is entitled "An Act to provide for a Geological and Natural History Survey of the State, and to entrust the same to the University of Minnesota." Under the law, therefore, organising the survey, the Regents of the University became its directors and have at different times appointed officers to prosecute the different lines of scientific work. The order of carrying on the work is prescribed in the law establishing it. In accordance with such prescription the geological work has been in progress for twenty years, the zoölogical work for four years, the botanical for two years, and the topographical for one year. Originally the separation of these four lines of work was not formally insisted upon by the Board of Regents and certain botanical and zoölogical brochures have up to this time appeared from the office of the State Geologist. More recently, however, contingencies arose that induced the Board of Regents so to classify the work of the survey that each department should be under the charge of a specialist who might be expected to labor toward the ends defined in the organic law, with greater directness than under the unperfected arrangement. The accompanying work, then, is a report of the botanical division of the survey, and the first volume of the botanical series. It is transmitted in the customary manner.

It is necessary to add in this place a word to what is more fully discussed in that portion of the introductory chapter which relates to nomenclature. The action of the Botanical Club of the American Association for the Advancement of Science, at the meeting in Rochester, New York, during the month of August, 1892, is a very grateful one to all who have wished for some radical reform in our laws and customs of botanical nomenclature, The rules of the Paris Congress have in general been reaffirmed and the modifications of the code are for the most part improvements. The action of the club certainly marks the end of an unfortunate epoch in the history of American botany, and in the future it may be expected that many and evident benefits will be derived from the establishment of nomenclature upon some other than a personal basis.

In accord with the action of the Botanical Club, I should have adopted in this work the *1753* date for genera as well as for species, had not most of the pages been in type when the action was taken. In accordance with the new rule the following changes in generic nomenclature are suggested to persons using this volume.

Mariscus Hall. (1742) = *Cladium* P. Br. (1756).
Cyperella Cram. (1744) = *Juncodes* Adans. (1763).
Ramium Rumpf. (1747) = *Boehmeria* Jacq. (1763).
Stellularia Linn. (1748) = *Stellaria* Linn. (1753).
Leuconymphaea Ludw. (1737) = *Castalia* Salisb. (1805).
Nymphaea Ludw. (1737) = *Nymphaea* Salisb. (1805).
Capnorchis Ludw. (1737) = *Bikukulla* Adans. (1763).
Cracca Linn. (1747) = *Colonila* Adans. (1763).
Ricinocarpus Burm. (1737) = *Acalypha* Linn. (1753).
Stellaria Ludw. (1737) = *Callitriche* Linn. (1753).
Lappula Hall. (1745) = *Lappula* Moench. (1794).
Leptostachya Mitch. (1748) = *Phryma* Linn. (1753).
Pentagonia Sieg. (1737) = *Legouzia* Dur. (1782).

In the spelling of generic names the following are the preferable forms: *Cypripedium*, *Pyrus*, *Pyrola*, *Pentstemon*. In the matter of specific nomenclature the only change that need be made to follow the rules of the Botanical Club is the substitution of the second oldest specific name in the duplicate binomials. *Phragmites phragmites* (Linn.) then becomes *Phragmites vulgaris* (Lam.). While the writer is not at all in sympathy with this rule of the Botanical Club, which makes an exception to the law of priority of which no exception should under any circumstances be allowed, nevertheless, in accordance with his belief that the action of so representative a body of botanists should have its due weight, he suggests that this change be made in the duplicate names of the list.

It has been intimated that the position of the *Characeae* is not apparent in the general scheme of arrangement proposed in the introduction. It seems clear to the writer that this group is to be included among the Sporophyta-Archegoniatae. Whether the sporophytic plant is represented by the so-called pro-embryo[1] or is altogether suppressed, it would seem proper to include the *Characeae*, as has been done, among the Sporophyta. An extended discussion of the point will not be proper here, but it may be noted in passing that the proposition that the pro-embryo of *Chara* is really homologous with a sporophytic plant is not altogether indefensible.

---

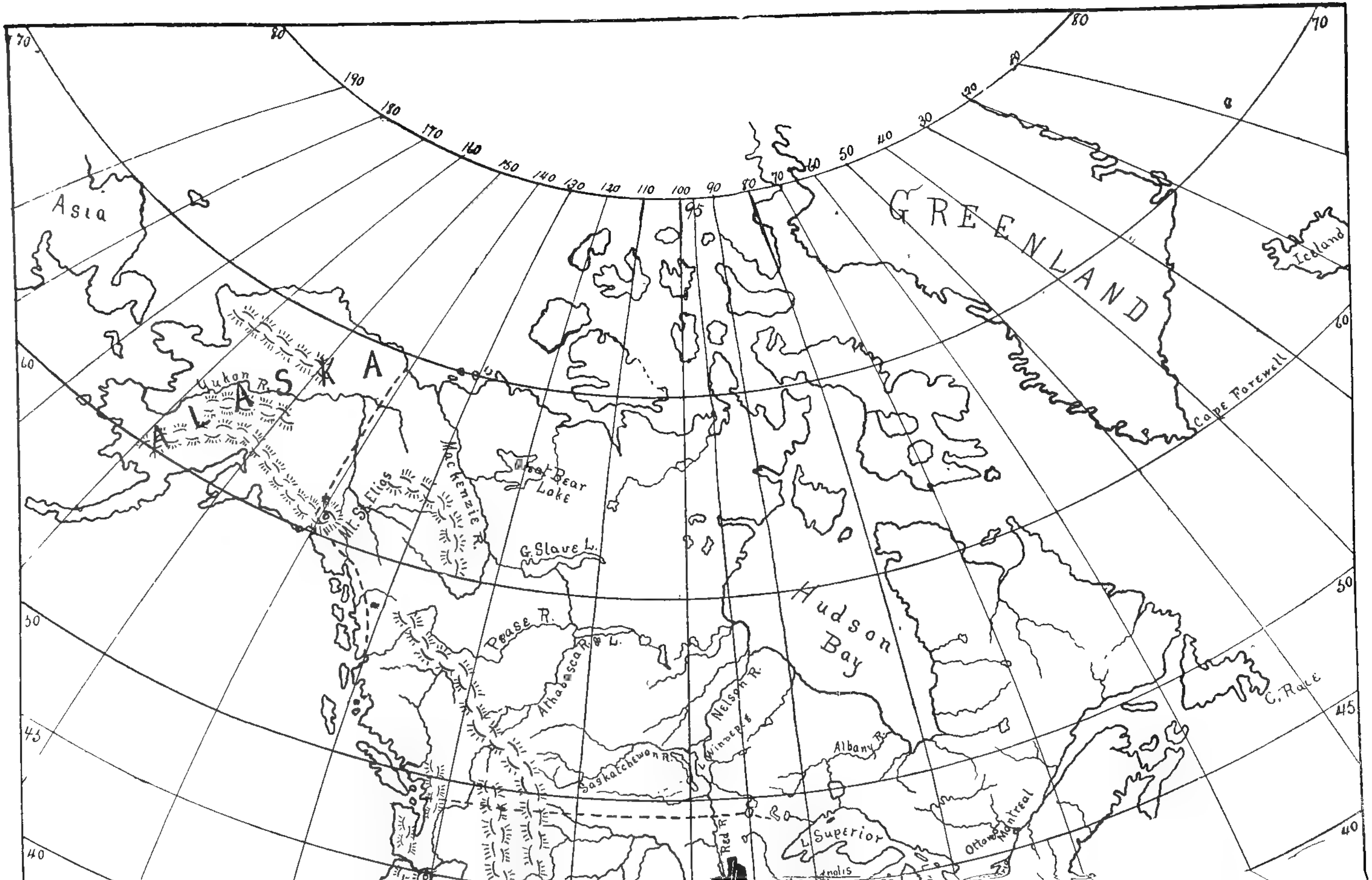
[1] Vines: Journ Bot. (1878).

Acknowledgements not already made in the introductory chapter may here find an appropriate place. To very many I am under grateful obligation for assistance and encouragement. I may name most particularly Dean C. W. Hall, of the University of Minnesota; Dr. N. L. Britton, of Columbia College; Prof. E. L. Greene, of the University of California, and Dr. C. E. Bessey, of the University of Nebraska. Each one of these has aided me and I take pleasure in assuring them of my sincere gratitude and regard. I am also indebted to Maud R. MacMillan, my wife, for no little help in the proof-reading and indexing-work, and to my sister, Bertha McMillan, for similar kindly offices. I extend my thanks to them.

The general plan of this volume will be recognised by my professional co-workers as somewhat new, or at least untried. They will doubtless appreciate without any further statements on my part, the many difficulties that confront one who attempts to follow such a plan. I trust they will also bear in mind that the writer is keenly aware of many defects in his work, and doubts not that there are others which have escaped his attentention. Oversights, errors and positive blunders are scarcely to be avoided in any work that is made up of such a mass of detail as in the case in hand. I hope, however, that these errors have been reduced to a minimum, and that such as exist, in spite of what I trust has been a due degree of watchfulness. will not mislead anyone who may use this book. In spite of the onus that to a certain degree rests upon the compiler of a local flora, I believe that even in such a humble department of botanical science there is opportunity for useful study. Where the present work may have failed, others, it may be hoped, will succeed, and, if directly or indirectly the writer has contributed a little to the development of our knowledge of the plant population of the continent, he will feel well repaid for labors which have at times been both arduous and confining.

CONWAY MACMILLAN

University of Minnesota
December 24, 1892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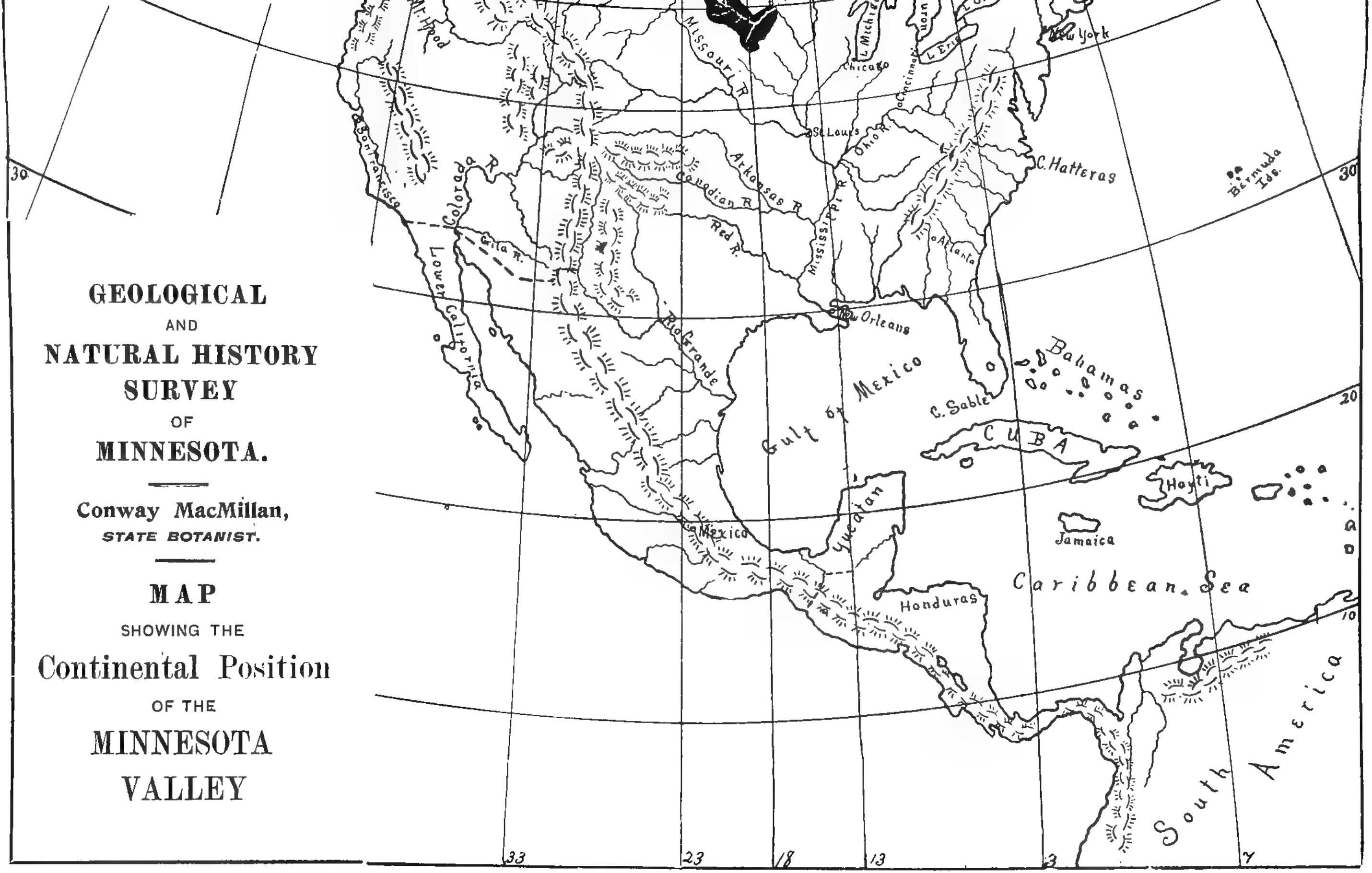

GEOLOGICAL
AND
NATURAL HISTORY SURVEY
OF
MINNESOTA.

Conway MacMillan,
STATE BOTANIST.

MAP
SHOWING THE
Continental Position
OF THE
MINNESOTA VALLEY
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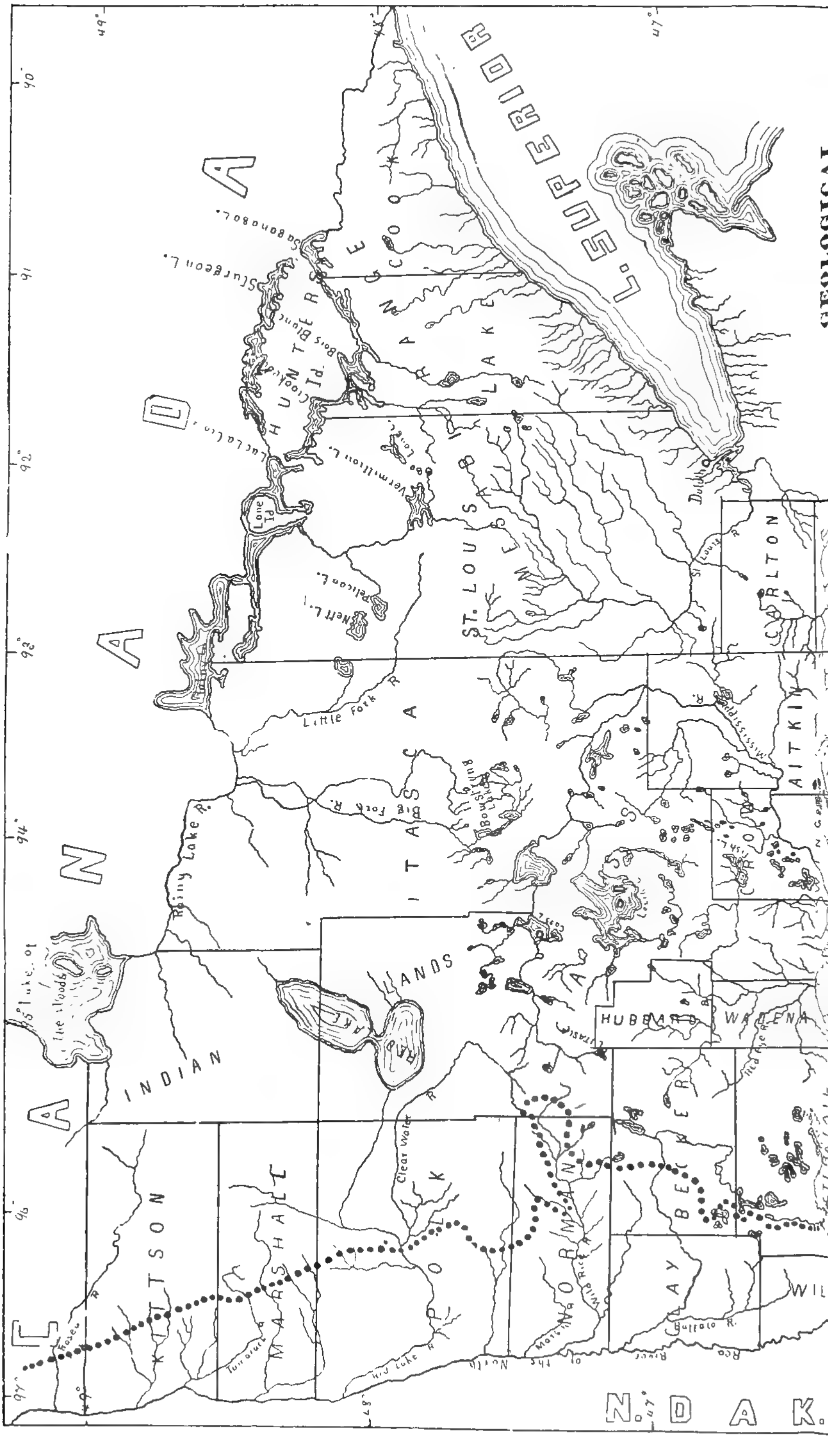
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Big Fork R.
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Rainy Lake R.
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INDIAN LANDS
RED LAKE
CASS
Leech L.
CROW WING
HUBBARD
WADENA
Itasca
Clear Water R.
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KITTSON
MARSHALL
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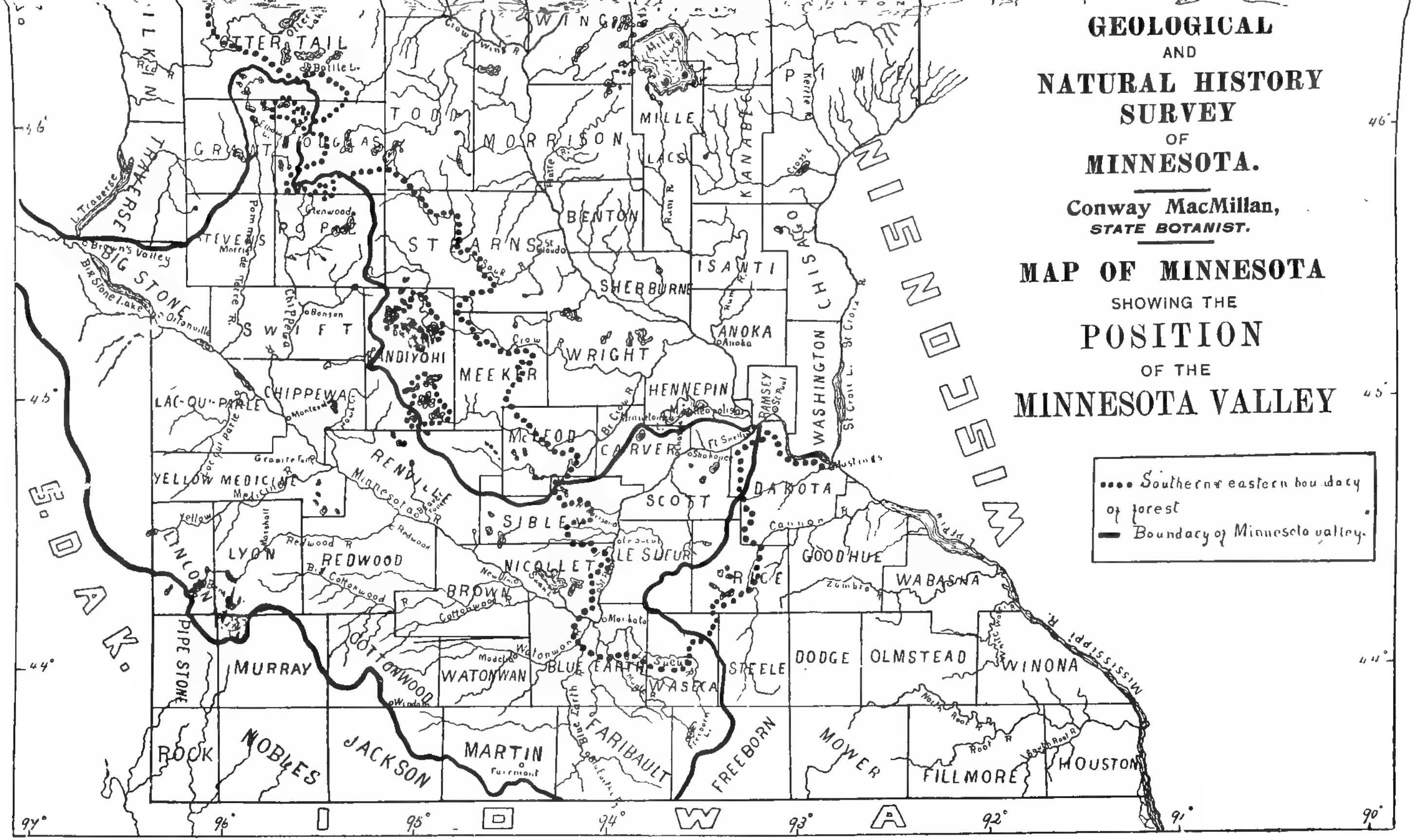
GEOLOGICAL



GEOLOGICAL
AND
NATURAL HISTORY SURVEY
OF
MINNESOTA.

Conway MacMillan,
STATE BOTANIST.

MAP OF MINNESOTA
SHOWING THE
POSITION
OF THE
MINNESOTA VALLEY

•••• Southern & eastern boundary of forest
▬ Boundary of Minnesota valley.

INTRODUCTION.

The work of a Botanical Survey. In the law of March 1st, 1872, providing for a Geological and Natural History Survey of Minnesota, it is directed that an examination of the vegetable productions of the state, embracing all trees, shrubs, herbs and grasses, native or naturalised, shall be included in the said survey. It is furthermore provided that, under the supervision of the Board of Regents, who, by law, are constituted the Directors of the survey, reports shall from time to time be made to the people of the state, and suitable provisions are determined for the distribution of these reports. A task of considerable magnitude is thus laid upon the officers of the survey in whose charge the botanical work is placed. Not only must those conspicuous members of the vegetable kingdom—the flowering plants, pines and ferns—be subjected to examination; but the less prominent and lower forms, such as the fungi, algae, lichens, bacteria, slime-moulds and problematic organisms, must receive what may seem to be their due share of attention. These latter forms from their intimate connection with the health, nutrition and activities of man may rightly claim a careful study. But up to the present time very little is known of the lower plant forms as occurring in Minnesota. In the catalogue prepared by A. E. Johnson, and published most fully in the Bulletins of the Minnesota Academy of Sciences, there will be found the first serious effort to bring together into a list some information concerning the fungi of the state (1). In Bulletin No. 3 of the Geological and Natural History Survey of Minnesota, Mr. J. C. Arthur, assisted by Messrs. Warren Upham, L. H. Bailey, E. W. D. Holway and others, presents the results of a brief but fruitful collecting trip in northern Minnesota, together with a number of notes compiled from various sources (2). In this list there will be found reference to many of the lower plants, but the number here determined can hardly represent more than a small fraction of all which certainly exist within the limits of Minnesota.

---

(1). **Johnson:** Bull. Acad. Sci. Minn., Vol. I. (1877-78-79).

(2). **Arthur:** *Results of Botan. Work in Minn. for 1886.* Bull. Geol. and Nat. Hist. Survey, No. 3. (1887).

During the three years of 1889, 1890 and 1891, the collection of data in this comparatively unexplored region has been diligently prosecuted by the Botanical Department of the University of Minnesota, and the information thus obtained has become the property of the survey. It is intended at some time in the future, barring unforeseen contingencies, to present as complete a list as possible of the fungi and algae of the state. While this reconnoisance has been in progress much labor has been expended upon the enlargement of our knowledge of those plant-groups which have already commanded, from their greater prominence, the attention of students of the Minnesota flora. Owing to the changes in nomenclature and the never-finished revision-work which modifies our conception of genera and species as well as of the larger divisions, and in the light of constantly advancing scientific knowledge, there is brought near to us the necessity of re-examining somewhat of the botanical work already done. By such examination it alone becomes possible to present the most modern aspect of such a study as is, under the law, directed towards the vegetable products of Minnesota.

In the present volume a mass of revisional and considerable new material bearing upon the plants of Minnesota has been collected. For a proper limitation of the work within bounds a natural group of plants—the higher seed-plants, or metaspermæ—has been selected, and these plants have been considered with reference to a limited, but natural portion of the total area of the state. In this way new facts are conveniently grouped and the old facts are brought into a somewhat different angle of vision.

The importance of studying a natural area. It is not commonly the custom of those who compile local floras to select districts limited by nature rather than by man, as the area for investigation. It is far more usual for some political district to be chosen, such as, for example, a group of states, a single state, a county, a town or a region within a circle drawn with arbitrary radius around some central city, lake or valley. In a list of local floras published in North America (3), Dr. N. L. Britton enumerates 791 titles of works that have been published since the early colonial days. These fall into three classes, political, geometrical and natural, with reference to the areas of which they treat. To political areas 590 titles are referred, upon examination of the whole list; to geometrical, 142 titles and to natural areas only 59 titles. The more popular methods do not, however, afford so good a field for scientific grouping of facts nor do they permit, without a most tedious and painstaking tabulation and criticism, any particularly useful generalisations which might be based upon the facts when properly arranged. For there is, apparently no very close connection between those conditions which govern the boundary-lines of a political district and the distribution of plants within those boundaries. The boundaries of Minnesota are certainly not accidental, but have been fixed through the interaction of a complicated series of causes and events, many of them too subtile and elusive to permit of classification. Just as certainly the kinds of plants in Minnesota, their relative abundance or scarcity. their positions in forest, lake or meadow, their general or local distribution are determined by a similarly complicated and interlocking series of causes and events, many of which will also, it is probable, be found to be too difficult and hidden for successful analysis. In the effort to unravel somewhat of the problems suggested, it is necessary that attention should not be diverted to something quite extraneous or superficial and, therefore, just as we should not attempt to interpret the laws governing the action of a constitutional convention, by periodic examinations of a mercury-barometer, no more should we attempt to investigate the laws of plant-distribution in Minnesota by adhering to the artificial lines which separate it from adjacent commonwealths or divide it into counties, towns or sections.

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(3). **Britton:** *A list of State and Local Floras.* Contr. Col. College Herb. (1890.)

The Minnesota valley as a natural area. When one endeavors to divide the state of Minnesota into natural regions for the purpose of prosecuting a botanical survey, the river-valleys at once present themselves as suitable areas. As is well-known Minnesota lies squarely at the crest of the North American continent. Its altitude above the sea is less than that of other places which might be named; but notwithstanding this it is within its borders that the three great river systems of the continent find their head-waters. Flowing northward is the Red river, the principal tributary to Hudson Bay; flowing eastward is the St. Lawrence, the principal tributary to the Atlantic, and flowing southward is the Mississippi, the great central river of North America, emptying its waters into the Gulf of Mexico. There may be distinguished then, these three drainage-basins, and each might be a suitable district for study along the lines contemplated in the establishment of a botanical survey. It happens however that the Mississippi drainage-area in Minnesota admits of a natural subdivision. The Minnesota river which joins the larger, but geologically newer stream, at Ft. Snelling, is in many ways the most interesting portion of the Mississippi basin. As will be shown later, in the special chapter devoted to this valley, the Minnesota is peculiarly central in its location and remarkably interesting, not only from its topography and situation, but on account of its history as well.

Occupying the position that it does the Minnesota valley, while a subsidiary drainage-basin, becomes one of first importance in Minnesota. It is, therefore, the natural region which has been chosen for study at this time. Later, it is hoped, the other basins to which the superficial area of Minnesota may be referred, will receive attention. Thus a final report of the botanical survey will knit together the data acquired through the consecutive investigation of the different natural districts making up the state. For the purpose of the botanical division of the Geological and Natural History Survey, then, the state of Minnesota may be considered as presenting these divisions: (3½).

I.	Rainy Lake river drainage-basin	11,347 sq. m.
II.	Red river drainage-basin	18,106 sq. m.
III.	Lake Superior drainage-basin	7,689 sq. m.
IV.	Minnesota river drainage-basin	15,706 sq. m.
V.	Rock river drainage-basin	1,929 sq. m.
VI.	Des Moines river drainage-basin	1,639 sq. m.
VII.	Cedar River drainage-basin	1,206 sq. m.
VIII.	St. Croix river drainage-basin	3,669 sq. m.
IX.	Other tributaries of Miss. below St. Paul	6,399 sq. m.
X.	Central Mississippi drainage-basin	16,596 sq. m.
	Total area of Minnesota	84,286 sq. m.

Only the 4th and 10th of these basins are peculiarly Minnesotan (disregarding the unclassified IX. div.). Of these two the Minnesota is much the older and more interesting area, as will be discussed later.

History of botanical investigation in the Minnesota valley. In the earlier published works relating to the plants of Minnesota it is not possible to determine accurately what references

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(3½). **Hall:** *Physiographic Conditions of Minnesota.* Proc. Hort. Soc. 393 (1884).

belong to the valley of the Minnesota. Since no bibliography has yet been published of the district in question or of the state in general—except the preliminary one compiled with much care by Mr. Warren Upham (4)—it seems advisable to introduce at this point such a list as shall cover at least the more prominent papers, memoirs and volumes known to the writer.

Bibliographical List of Publications Relating to the Plants of Minnesota.

In this preliminary and partial list the * is prefixed to such titles as convey information concerning the valley of the Minnesota.

Jesuit Relations (1626–1679).
Occasional references to food or fuel plants.

La Salle: Margry's Decouv. et Etabl. de France, Am. Sept. (1683).

Le Suer: Pennecaut's Narr. (1705).

Carver: Trav. N. Amer. (1779).
Observations of Sugar-maple, Vines, Oaks, Pirus, Prunus, Angelica, Apios or Astragalus, Humulus and a number of others, not all of which, perhaps, are to be credited to Minnesota.

****Pike:*** Exp. Miss. and La. during 1805–6 and–7 (1810).
Observations of Pinus strobus, P. resinosa, Tilia, Ulmus, Fraxinus, Quercus, Acer, Populus, Abies, Larix, Zizania, Thuja and a few others.

Torrey: List of Pl. coll. by Capt. D. B. Douglas at the sources of the Mississippi. Sill. Journ., ser. I, vol. IV, pp. 56–69 (1822).

****Nuttall and Schweinitz:*** Say's Pl. from Long's Exp., Appx. in Keating Narr., vol. II (1825).
124 species of ferns and spermaphyta, 30 definitely attributed to Minn.

****Beltrami:*** Decouv. Sourc. Miss. et Sanglante (1824).
Observations of Maples and Oaks.

****Schoolcraft:*** Narr. Exp. Itasca, pp. 160-165, plants coll. by Dougl. Houghton (1834).
247 sp., 115 attributed to Minn.

****Torrey:*** Geyer's coll., Nicollet Rep. (1843).
Catalogue of 446 sp., 60–65 from Minn., most of the others from Dakota.

Eaton and Wright: Man. Bot. N. Amer., ed. VIII (1841).
Some vague references to Minnesota localities.

Gray: Man. Bot. N. U. S., ed. I (1848) and succeeding editions.
In the first edition vague references to Minnesota localities.

****Featherstonehaugh:*** Canoe-Voy. Minnay Sotar (1847).
A few notes of common trees, shrubs and herbs.

****Pope:*** Rep. Pemb. Exp., ex. Doc. 42, 31st Cong., Sess. I. (1851).
Notes of common trees and shrubs.

****Parry:*** Syst. Cat. Pl. Minn. and Wisc., Owen's Rep., pp. 606–622 (1852).

****Clark:*** Hanchett and Clark, Rep. Geol. Surv. (1864).
Enumeration of 65-70 native plants and 30 cultivated varieties.

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(4). **Upham:** *Cat. Fl. Minn.* XI. Rep. Geol. Nat. Hist. Surv. Minn., (1883).

****Lapham:*** Cat. Pl. Minn., Rep. Minn. Hort. Soc. (1875).

951 species noted as growing in Minn.

****Twining, Winchell, Harrington, Sperry, Juni, Roberts, Garrison:*** In vols. I–IX, Ann. Reps. Geol. and Nat. Hist. Survey, N. H. Winchell, State Geologist (1872–1880).

Dawson: Bound. Rep., pp. 351–379 (1875).

289 sp. Phanerogams from Canadian line.

Chickering: Pl. Coues, Red river coll., U. S. Bound. Comm. (1878).

96 species from boundary region near Pembina.

****Cathcart:*** Ferns of Minn., Bull. Minn. Acad. Sci. I., 303–304 (1877).

30 species and 3 varieties.

Manning: Wild Flowers of Lake Pepin valley, Rep. Minn. Hort. Soc., pp. 83–116 (1884).

Catalogue of 504 species.

****Upham:*** Catalogue of the Flora of Minnesota; Geol. and Nat. Hist. Survey, Rep. XI (1883); reprinted (1884).

1650 species of flowering plants and Pteridophyta. This very valuable work is a complete compilation from preceding papers and contains much additional information.

Arthur: Rep. Botan. Work in Minn. for 1886, Bull. 3, Geol. and Nat. Hist. Survey of Minn. (1887).

Includes work by Holway, Bailey, Upham and others. 750 sp. listed from N. Minnesota. Camp located in 48° N. lat., near Lake Vermilion. This list is important, not only as a contribution to our knowledge, but because it is the only list yet published based entirely on herbarium material which is preserved by the state

****Upham:*** Suppl. Minn. Flora, Bull. 3, Geol. Nat. Hist. Surv. (1887).

****Britton and others:*** Torrey Bulletin—papers on generic revision often contain notes on Minn. forms. (1884—).

****Botanical Gazette papers:*** Many notes and references to Minnesota plants are scattered through this publication. (1885—).

****MacMillan:*** E. extension of *Pentstemon albidus*, Torr. Bull., Oct. (1890).

Id. Note on a Minn. species of *Isaria* and an attendant *Pachybasium*, Journ. of Mycology, vol. VI, No. 2 (1890).

Id. Note on a new species of *Actinoceps*, B. and Br., Am. Naturalist, Aug. (1890).

Id. Notes on some Phanerogams of Central Minnesota, Bot. Gazette, Dec. (1890).

Id. *Salvinia natans* in Minnesota, Torr. Bull., Jan. (1891).

Id. Some notes on parasitic fungi affecting the leaves of *Sarracena purpurea* in Minnesota, Torr. Bull., July (1891).

****Id.*** Les Plantes Européénes introduite dans la valleé du Minnesota, Rev. Gen. de Botan. No. 34 (1891).

E. J. Hill: Pinus Banksiana in the West, Torr. Bull, Mar. (1890).

Id. Zizania as found by the explorers of the N. W., Torr. Bull., Feb. (1891).

Id. Flora of St. Croix region, Bot. Gazette, May (1891).

Id. Flora of the Lake Superior region, Bot. Gazette, June (1890), and fol.

****Leiberg:*** Fl. Dak. and Mont., Rep. Minn. Hort. Soc., pp. 361–367 (1884).

Trelease: Revision of Epilobium (1891).

References to Minnesota material.

Id. Revision of Rumex (1892).
References to Minnesota material.

Wheelock: Genus Polygala in N. America, Torr. Mem. II, No. 4 (1891).
References to Minnesota material.

Bailey: Study of the Genus Carex (1887).
References to Minnesota material.

Bailey: Types of the Genus Carex (1889).
References to Minnesota material.

**Sargent:* N. Amer. Silva, vols. I, II, III,—(1890—).
References to Minnesota plants.

Johnson: Mycological Flora of Minn., Bull. Minn. Acad. Sci. (1877, 1878, 1879).
775 species of fungi, many doubtfully identified.

**Arthur:* Some Algae of Minn. supposed to Poison, Bull. Minn. Acad. Sci. Appx. (1883).

Johnson: Mycological Flora in VI. Rep., Geol. and Nat. Hist. Survey (1876).
558 species listed; many doubtful.

Gray: Revisional papers in Proc. Am. Acad., (1883–1888).

Watson: Revisional papers in Proc. Am. Acad., (1885–1891).

Britton: Revisional papers in Trans. N. Y. Acad., (1887—).
In all of these occasional references to Minnesota material are to be looked for.

Macoun: Flora of Canada, (1883—).
References to northern border localities.

Upham: Geographic Limits of species of Plants in the Basin of the Red river of the North, Bost. Nat. Hist. Soc. Proc. (1891).

**Gray:* Synoptical Flora (1886).
Many references to Minnesota.

Reports of Minn. Hort. Soc., Forestry Comm., Agric. Soc. and Experiment Station. (1870—).

Wolle: Algae of Minneapolis, Bull. Torr. Club., X, 13–21 (1883).
Enumeration of species new to U. S., collected near Minneapolis by Miss Eloise Butler. 18 sp., 8 forms new to science.

Wolle: Desmids of U. S. (1884).
References to Minnesota localities.

Id. Fresh-water Algae of U. S. (1887).
References to Minnesota localities.

Journal of Mycology, (1885—).
Occasional scattered allusions to Minnesota localities and fungi.

Houghton: Loc. Plants coll. in N. W., Exp. (1834).

**Riddell:* Syn. Fl. W. States (1835).
References to Minnesota localities.

Lapham: Grasses of Wisc. and adjacent States, Trans. Wisc. Agric. Soc., III, 397–488 (1853).

Whitney: Flora of Lake Superior Region; Foster and Whitney's Rep. Geol. Lake Sup. Land Dist., II, 359–381 (1851).

Pammel: Weeds of S. E. Wisc. and Minn. (1887).

**Leonard:* Filical Fl. Minn., Bull. Minn. Acad. Sci. (1877–78).

Doubtless other titles could be added, but the above will indicate most of the geographical work that has been accomplished upon the plants of Minnesota. A large number of local collectors are and have been residing in Minnesota, and to the energy of these is due our information, at present accessible, concerning the plants of Minnesota. To give a list of these would be difficult since they are scattered throughout every county. Many have but meagre collections, while some have worked long and patiently over the state flora and possess good representative collections from all parts of its domain.

Unfortunately, the only excellently complete list of Minnesota flowering-plants and ferns is not largely based upon an existing herbarium. In the herbarium of the Geological and Natural History Survey, when it came under the charge of the present State Botanist, there were only 621 species of our vascular flora out of about 1,700 known, represented by specimens. Since that time many of the gaps have been filled, while many remain. The Arthur list of 1887 is fortunately based upon a skilfully prepared and carefully preserved herbarium and this is on file in the cases of the Survey. Other accessions to the state-flora, as represented in the herbaria preserved at the University have come from time to time through exchange, presentation and personal collection. The principal and most important contributions to the state-cabinets have been made under the present working plan. In June, 1891, Messrs. E. P. Sheldon, C. A. Ballard and B. C. Taylor were commissioned to prosecute field-work in different portions of the Minnesota valley. Mr. Ballard spent two months in the vicinity of the mouth of the Minnesota, working through Carver, Scott and Dakota counties. Messrs. Sheldon and Taylor spent three months in the southern and western portions of the valley. Pope and Douglas counties were specially studied by Mr. Taylor, and the valleys of the Cottonwood, Redwood and Lac Que Parle by Mr. Sheldon, who also spent some time along the northeast slope of the Coteau des Prairies, especially in the vicinity of Lake Benton. Through the intelligent, energetic and expert endeavors of these, some 20,000 specimens of flowering-plants, vascular cryptogams, mosses, fungi and fresh-water algae were collected, of which number more than 3,000 have been mounted in proper fashion and placed in the herbarium of the survey. The total number includes many exchange plants and duplicates which will be of value in building up weak places in the general herbarium.

Care and identification of material. The identification, distribution and arrangement of all the phanerogamic and vascular material collected during the season of 1891 was put in charge of Mr. E. P. Sheldon, whose ability and aptness for the work have been an indispensible assistance to the author. Under the direction of Mr. Sheldon, Mr. W. D. Frost and Mr. A. P. Anderson gave some time to the mounting and arrangement of such plants as were reserved for the general herbarium. This work occupied the entire autumn of 1891 and the winter and part of the spring of 1892. The large collections in the herbarium of the Department of Botany, which numbers not far from 62,000 specimens, afforded excellent facilities for comparison when critical forms were under consideration. A few doubtful forms have been submitted to specialists, but in no cases have the determinations of Mr. Sheldon been modified.

Citation of herbarium specimens. Every plant in the herbarium of the survey is known by its collector's name followed by a serial number. It thus becomes possible to refer to any plant definitely and decisively. Any mistakes in identification, if such should by chance occur, would thus be easily discovered and corrected by future workers. Under each species in the subsequent list of Metaspermae occurring native in the Minnesota valley, all the herbarium material at hand is entered. Not only is the Minnesota valley material properly inserted, but all Minnesota specimens receive their place under the appropriate heads. Only such Minnesota specimens as belong to species not known or believed to occur in the drainage basin of the Minnesota river are excluded. In this way a complete account of the status of each species, in the herbarium, is presented to students throughout the state, and gaps or poorly represented species may receive attention from future collectors.

In addition to the citation of all Minnesota specimens of Minnesota plants, so far as represented in the herbariums of the University, citations have been made from the personal collections of Mr. Sheldon, Mr. Wickersheim, of Idlewild, Lincoln county, and Judge Moyer, of Montevideo, gentlemen who have kindly contributed by the loan of their herbaria to our knowledge of the limits of species in their districts. The collection of Mr. Sheldon, cited as *Herb. Sheld.*, is principally from the Ft. Snelling district; that of Judge Moyer, cited as *Herb. Moyer*, from the mouth of the Chippewa river; that of Mr. Wickersheim, cited as *Herb. Wickersheim*, from Lincoln county and Mankato. With the addition of these, the total number of locality-citations is not far from 6,000.

Determination of ranges outside of Minnesota. Curiously enough there is no work accessible to students of the Minnesota flora in which the complete range of Minnesota plants is given. This can readily be excused in the case of fungal or algal lists, for the ranges of many of these lower forms are very insufficiently known and could scarcely be compiled without great labor and uncertainty. In the case of the higher seed-plants, the Metaspermae, there is less difficulty in obtaining the intra- and extra-continental distribution, but in manuals, floras and lists published in America it is common for the range, outside of the area arbitrarily chosen, to meet with little or no consideration. This is proper if the list is intended only as an enumeration, but if it is meant to be serviceable to students in any other way, it would seem scarcely out of place to indicate in it the complete range of each species noted. In no other way can the plants of a region be presented logically to the student. This is especially true when the lists are based upon unnatural districts of observation. In any case it seems useful to know the general range. With this in view, the writer has been at considerable pains to compile from the original sources, as far as possible, the American and Old-World distribution of all plants which are considered as native to the Minnesota valley—that is, all plants introduced within its borders by agencies other than the activities of man. Citations of page and number are given of all authorities thus consulted. The principal local floras of America have been indexed and certain lists of the Old World, comprising some from both Atlantic and Pacific regions, have been included in this tabulation. Under each specific name citations of literature upon which geographical range is based may be found, and reference to such cited works will be sufficient in most cases to fill out the detail of distribution which is suppressed for want of space.

Citation of generic and family ranges. The genera and families are handled in much the same way as the separate species and varieties. Under each generic name is cited the principal synonymy, excluding most pre-Linnean names, and following this a few standard compendia of genera or generic indices. It is thus possible for the student to refer at will to the detailed descriptions of genera found in the cited works, or very readily to come into a knowledge of the literature concerning any genus of his inquiry. The number of species referred to a given genus in different portions of its range is indicated and the general generic range is briefly given. This compilation permits the student to see at once in which portion of its general range any given genus is preponderantly developed, and to compare the relative development of allied or distant groups.

Citation of authors of genera and species. In order to obtain stability of nomenclature it is necessary to provide that the name of a plant, *the specific name*, can not be changed through caprice or whim. Nor can it be changed through ignorance, providing the mistake through which the change was made has been discovered. The refusal to correct mistakes and the disinclination to do thorough bibliographical work before publishing a new specific name is the cause of most confusion in botanical nomenclature. Hence has arisen the so-called international law or law of priority which provides that the earliest published specific name of any plant must stand providing that name is not antedated by some other similar name applied to a plant belonging in the same genus. Many botanists do not admit the validity of this principle except in the case of species which they may have themselves named and published. With reference to others they are accustomed to insist that "custom," "long-established-habit" and a conservative condition must be maintained. This is to save the difficulty of having to revise their own systems of nomenclature, and serves in many cases to cover inaccuracies or hastiness. With this conservative position, the unthinking and unbotanical are always distinctly satisfied and are accustomed to declare that botanical nomenclature is purely a "practical matter" and should be taken out of the hands of the botanists altogether and turned over to some unprofessional commission for settlement (5). Objections of this sort are natural, for the changing of names in our accustomed department of science is always a confusing matter. Such criticism is, however, unthinking and unbotanical because it fails to recognise that the whole difficulty has originated on account of just such conditions as are extolled and recommended for perpetuation. The only way to obtain a stable nomenclature is by rigidly enforcing the law of priority with reference to specific names. All instability finds its well spring in the disregard of this law, and stability under our present general system of nomenclature can only be obtained by strict adherence to the oldest available specific name, by whomever or wherever it may have been published.

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(5) **Rand:** *Bot. Gazette*, XVI. 318-319 (1891).

The cause of the present upheaval in plant nomenclature, signalised, but not at all initiated, by such a book as that of Kuntze (6), is very easy to discover. Never so much as to-day has botany become world-wide. The multiplicity of periodicals, the facilities for exchange and correspondence between different countries, expeditions, congresses, communications, the development of new centers of activity in all parts of the globe, all conspire to make insularity of nomenclature impracticable, except for those who do not care to be within the pale of the modern conditions. It was a matter of less importance fifty years ago, if the name *Potamogeton pauciflorus* was given to one plant in France, by Lamarck, and to quite a different plant in America, by Pursh. There was less danger of confusion, for French botanists and American botanists were not then so distinctly interested in each other's field. The international character of science was recognised long ago in the adoption of an international language—Latin—in which oriental and occidental investigators can communicate, whatever their native dialect. The law of priority simply carries this recognition farther, and provides that in the department of nomenclature Latin shall be used in the same sense in all countries.

In America the rightful implication of the law of priority has been ably expounded by Britton (7) and Greene (8), seconded by many others. Under their leadership most of the younger school of botanists have determined to enlist, but the older men whose life-works have been largely accomplished under the older and insular interpretation, the *provincial dispensation*, as it may be named, have in most cases failed to withdraw from the position of their youth—the "position of naming-plants-as-one-pleases"—and their publications are in consequence marred by the illegal nomenclature. Manuals and handy-reference-floras, most local lists and many monographs have perpetuated the faulty and insular methods and it is but very recently that a concerted attempt is being made to establish this department of botanical work upon the only sure foundation possible without a complete withdrawal from the existant system.

The present list, therefore, contains many unfamiliar names, but with these are cited, so far as possible, other post-Linnean names; so that the reader who prefers to maintain the current, though not-to-be-recommended attitude, will "have no difficulty in choosing a name to suit his taste, or, if he desires, he may establish a name of his own." Preference has always been given, by the writer, to the oldest unpreëmpted specific name and the date of publishing has been determined in every case with as much accuracy as possible. For all names printed, the author, page-number of work and date of publication have been cited and an effort has been made to procure exact bibliographic detail so far as conditions would permit. Bibliographic works, such as those of Pritzel (9) and Jackson (10), have been of much assistance in determining publication dates of many obscure and inaccessible works while the libraries of the Department of Botany and the Survey, at Minneapolis have been serviceable. In addition, the full collection of books belonging to the University of Nebraska, and the personal library of Dr. Chas. E. Bessey were put at my disposal, and through this courtesy many references that could not otherwise have been verified were critically examined. Furthermore, under the direction of Dr. N. L. Britton and Dr. Thos. Morong, bibliographic work on some 250 references which had proved puzzling was conducted for me in the libraries of Columbia college and in New York. By this kindness many gaps have been filled. The Linnaean citations have been worked out with the aid of Richter's well-known work (11) and revisional assistance has been derived from the notes in Hitchcock's Ames Flora (12) and the chapters in Kuntze (13). Besides these a large number of minor aids have been received from numerous sources. I believe full credit is given under each head in the general list, for all sources of information drawn upon.

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(6) **Kuntze:** *Revisio Generum Plantarum* (1891).

(7) **Britton:** *Papers in* Bull. Torrey Bot. Club *and* Ann. of N. Y. Acad: Contr. Columbia College Herb.(1885——).

(8) **Greene:** *Pittonia, Flora Franciscana*, etc. (1885——).

Synonymy and orthography. It is not pretended that a complete synonymy is given in any case, although it has been the endeavor to make it as complete as possible. In the old division *Polypetalae*, use has been made of the remarkably exact and painstaking bibliographic index prepared by the lamented Sereno Watson (14); in the *Gamopetalae* the laborious compilations found in Gray's Synoptical Flora (15) have been, in most cases, considered final, while in the *Apetalae*, so-called, and the monocotyledons the works of Torrey (16), De Candolle (17), Richter (18) and many others have been of prime assistance. In addition to these, a number of other works have been useful, especially in the lower families, where, for an evident reason, the least compilatory labor has been expended by previous workers. In particular cases help has been extended by specialists, *e. g.*, by Morong in *Potamogetonaceae*, Lamson–Scribner in *Gramineae*, Britton in *Cruciferae*, Coulter in *Umbelliferae*, etc. This is all gratefully acknowledged.

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(9) **Pritzel:** *Thes. Bot. Lit.* ed. I. (1851.)

(10) **Jackson:** *Guide Lit. Bot.* (1881.)

(11). **Richter:** *Codex Linnaeus* (1835).

(12). **Hitchcock:** *Fl. Ames*, Trans. St. Louis Acad. Sci. (1891).

(13). **Kuntze.** *Revisio Generum Plantarum*, Vol. I, *introd.* CXXII--CXLVI. (1891).

(14). **Watson:** *Bibliographic Ind. N. Amer. Bot.* Pt. I (1878).

(15) **Gray:** Syn. Fl. U. S. (1886).

The synonymy is in general chronologically arranged and the specific name chosen is in every case so far as the writer knows, the one sanctioned by priority regardless of variance with "custom" or "authority." As explained above this is at once the most modern and, it would appear, the most logically correct rule to follow. One point which should merit attention, perhaps, is the uniformity with which capital letters are suppressed from specific names, even in the synonymy. It is probable that the writer is fairly open to criticism for suppressing such capitals in a synonym, while he might not merit it for the suppression in the particular name he himself is inclined to sanction. Nevertheless no capitals will be found in specific names whether they are derived from proper nouns or not. This is a practice in line with custom, as may be discovered by referring to the older American manuals, and is conducive to regularity and system. The particular practices of different authors in regard to this trivial point may be learned by reference to their pages. Again, ancient spelling has generally been retained in the specific names, even if at variance with a more recent rule. Thus the law of priority is guarded most safely, and personal preferences, are, so far as possible, excluded.

It must be noted, however, that the law of priority in plant nomenclature does not contemplate, as generally interpreted, any pre Linnaean work as of importance. An arbitrary starting point must be determined for botanical names just as an arbitrary point of latitude or longitude is determined. As there is no natural longitude to be discovered, so there is no natural demarcation-line between the older methods of nomenclature and the newer. Hence confusion arises: some writers cite generic authors back to Tournefort, others are inclined to go back to Dioscorides or Pliny (19) with their references. There is ample room for argument in this department of the subject, but apparently no room for dogmatism. It will be generally acknowledged that any starting point is, of necessity, arbitrary, and it becomes a matter of preference, to be determined as far as possible in the light of convenience and custom whether one base-line or another be adopted.

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(16). **Torrey:** *Fl. N. Y.* (1843); **Torrey and Gray,** *Fl. N. Am.* (1838-41).

(17). **De Candolle:** *Prodromus*, (1824——).

(18). **Richter:** *Plantae Europeae*, Pt. I, (1891).

The common notion of lay-botanists that Linnaeus was the founder of genera or the inventor of the binomial system of nomenclature, is of course, readily corrected by the facts of history. Nevertheless, Linnaeus is generally admitted to have been the first to reduce nomenclature, specific and generic, to an orderly condition. His work is therefore, for convenience, adopted as a meridian and in these pages specific citations do not go back of the 1st ed. of the *Species Plantarum* (20), nor generic citations (except in the case of some synonyms) back of the 1st ed. of the *Genera Plantarum* (21). I am unable to see any gain in citing from the *Systema* of 1735.

Citation of genera and families. It seems clear for apparent reasons that priority should govern in generic names, for in the present condition of botanical science the conception of a genus is relatively stable. This is true whether one adopts a wide or narrow notion of a given genus. Family and ordinal names, are, however, not yet likely to be stable, for they are based upon a more fluctuating foundation. It is probable that the time is not yet ripe for a definite and sharp determination of family or ordinal characters. While, then, priority may rightly govern in generic citation, there is no reason to insist upon it in family, ordinal or class citations. But if this should be gainsaid, the position may at least be maintained that the meridian here adopted should be the *Genera* of Endlicher (22). It would appear that any purely intellectual concept like a family of plants, which certainly has no objective existence, but is merely a category in which we are accustomed to group certain quite distinct individual organisms on the basis of supposed relationship, abstracted from observed and hypothesised resemblances, should be elastic in name as it is elastic in significance. The evident objection is that this is true also of genera and species, which are, in like fashion, subjective categories rather than objective realities. Admitting the unquestioned truth of such an objection, it seems nevertheless that the species and genera stand out somewhat less nebulously than the families, classes or divisions. Their boundaries have been more accurately mapped, their highways and by-ways have been more carefully charted and it is more admissible to demand for them at least the semblance of a stable nomenclature. In consequence of such considerations as these it has seemed unwise to insist upon strict priority in the names of families while maintaining it for the names of genera. This position is, however, not unlikely to be erroneous, or at least inconsistent.

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(19). **S. F. Gray:** *Arr. Brit. Pl.* (1821).

(20). **Linnaeus:** *Species Plantarum*, ed. I. (1753).

(21). **Linnaeus:** *Genera Plantarum*, ed. I. (1737).

(22). **Endlicher;** *Genera Plantarum* (1836-40).

For reasons outlined above the genera have been determined under the law of priority, but this has not been insisted upon for the families. Under both families and genera, page numbers of dated works are indexed, and such works have been selected as should at once put the student who refers to them in a fair way to gain a knowledge of the literature of any plant which might command his attention. The standard modern works have alone been cited, except in certain cases of peculiar historical or local interest, for, from these, proper references to older works may be compiled.

Generic synonymy and limitation. Since there is little uniformity in the limitation of genera, it is customary in works like the one in hand to follow some recognised authority, selecting the authority either at random or under the influence of local conditions. Bentham and Hooker's monumental work (23) has during the last twenty years served as an authority to the English-speaking races and in less degree to others. In general the lines of generic limitation established in this great work have been adopted by the writer. In particular cases, however, the lines of Baillon (24) and of the monographs collected in Engler and Prantl's not yet completed work (25) have been followed, thus emending the limits as proposed in the older volumes.

Synonymy has been quoted to indicate the precise limitations accepted and all this synonymy has been properly referred to its original authors, and the places and dates of publication have been compiled. The list serves, therefore, as a partial date-index to Bentham and Hooker, Baillon and the German monographers. Genera proposed prior to the 1st ed. of

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(23). **Bentham and Hooker:** *Genera Plantarum* (1862-1883).

(24). **Baillon:** *Histoire des Plantes* (1867—1881——).

(25). **Engler and Prantl** *Natuerl. Pflanzenfamilien* (1887-1893——).

Linnaeus' *Genera Plantarum* unless adopted by him have been regarded as devoid of prior right to consideration. In the Linnaean works, page-numbers and page-positions have been held to establish priority and older generic names have always been maintained over newer. When genera have been combined the older names are always retained for the new combinations, except in such cases as *Stachys–Betonica* or *Sorbus-Pirus* where the newer name received the greater number of species in 1753. This is the rule proposed by Kuntze and it is reasonable.

In general the nomenclature adopted is believed to be thoroughly abreast of the times. To compile this has been a much more difficult task than it would have been to accept unquestioningly the names as presented in such a book as the Watson and Coulter revision of Gray's Manual (26). It is believed, however, that in a list like this the eye should be cast forward instead of backward, that the future should receive consideraation as well as the past. To the complaint, which has much of reason in it, that all changes in nomenclature should be left to monographers and should be carefully avoided by the compilers of local floras, only one thing can be said. That is this: there is no honesty in hiding behind some other's work simply because one's own work is of humble nature. In local floras as well as in monographs the public has a right to demand the result of the best and truest convictions of its servants. It is dishonest to put forward anything which one does not believe to be correct, on the plea that some one else will correct it. It is discreditable to conform to a custom that one does not sanction, that one believes is in rightful course of final extinction. With this and other exigencies held in view, the writer has not hesitated to uphold as strict an interpretation of the law of priority as may be possible. It has been a matter of concern, not so much to gratify a conservative instinct in those who may have occasion to use this list, as to keep squarely in the current of progress towards the better botanical nomenclature of the twentieth century. Reforms are not brought about by inanition or conformity. They must be contended for even at the risk of temporary disturbance of the established order.

The details of working which must demand attention on the part of the "nomenclaturist" when he considers so wide a field as the names of living or fossil organisms may offer him, have been indicated in many papers and volumes. Nomenclators, such as those of Pfeiffer (27), Steudel (28) and Kuntze (29) together with the laws of zoological and botanical congresses and papers by distinguished taxonomists, such as Agassiz and A. Gray, have been freely consulted and the basis of nomenclature in the case of the Metaspermae has been derived from such critical, historical and bibliographic labors. Those who are interested in the detail may find abundant discussion in these cited works, which, together with the controversial and argumentative material published from time to time by the Royal Botanical Gardens at Kew, the Continental and Australasian Gardens and the various botanical periodicals and ephemera that concern themselves with such subjects, will be found to present the questions outlined above, from a wide variety of view-points. With Kuntze, it may well be said that while nomenclature itself is hardly to be named a science, it is certainly an important adjunct of science and as such demands thoughtful attention.

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(26). **Watson and Coulter:** *Gray's Man.*, 6 ed. (1890).

Arrangement of families and genera. The arrangement of families and genera follows as exactly as possible the lines laid down in Engler and Prantl's *Natuerlichen Pflanzenfamilien*, which is beyond compare the most important taxonomic summary yet published for the plant-kingdom. This arrangement is not particularly different from that which has come to be generally recognised within the last ten years. It is similar in general outline to that of Luerssen (30), Drude (31) and Warming (31½), and is a clear expression of modern views of the inter relationship and evolution of the flowering-plants. Such an arrangement is preferable to the more ancient ones just in such degree as it is more accurate. The accuracy of the arrangement adopted is acknowledgedly incomplete, but it is believed to represent the full research of the times.

Natural divisions of the vegetable kingdom. The constant effort of the botanist is to make his classification of plants indicate not only resemblance but relationships. Indeed resemblances are considered of value in taxonomy only in so far as they indicate relationships. For this reason no classification is, or can be stable, since no classification is ever mature or complete. The ever-progressing knowledge of plant-anatomy, distribution, physiology and especially of embryology renders the grouping of yesterday unscientific and archaic to-day. Popular manuals, wherever they may be published, however painstakingly and skilfully they may be compiled, are always distinctly in the rear of actual botanical advancement in that group which they propose to elucidate. The well-known and reasonable demand for stability in nomenclature is sometimes accompanied by an unreasonable demand for permanence of classification, but if such a demand could be granted it would indicate absolute stagnation in botanical or zoological science, such as can not, under present intellectual conditions of the race, readily be conceived. While, therefore, the constant shifting from one classification to another is exasperating to the conservative student, it is nevertheless a necessary result of advancing information, and to refuse to consider the new systems which may be put forth in scientific fashion is as unreasonable as it was in those days when the railway carriages were first brought into use for one to insist upon travelling by the old stage-lines of an earlier mechanical era.

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(27). **Pfeiffer:** *Nomenciator Botanicus* (1874)·

(28). **Steudel:** *Nomenclator Botanicus*, ed. II. (1840-41.)

(29). **Kuntze:** *Rev. Gen.* (1891.)

(30). **Luerssen:** *Systematischen Botan.* (1878-1882).

(31). **Drude:** *Syst. und Geogr. Anordn. Phan.* (1890).

(31½). **Warming:** *Syst. Botan.*, Germ. Tran. (1890).

The vegetable kingdom becomes more and more difficult to arrange in well ordered groups as one's knowledge of its complexities and relationships increases. The old notion, for example, that it is possible to divide plants into those with flowers and those without, by an arbitrary demarcation-line, has gradually disappeared as more and more information has been collecting regarding the life-histories and homologies of such transition types as *Selaginella*, *Isoetes*, *Cycas*, *Casuarina* or *Marsilia*. The two divisions seen so clearly by Linnaeus have come to merge into each other and must be defined to-day in far different terms than in 1735. And again the old divisions of the Dicotyledones—Polypetalae, Apetalae and Gamopetalae—have been found to be untenable, for they serve to separate into different groups, genera which from a preponderance of characters are generally believed to be closely related. Under the stress of renewed examinations the Polypetalae and Apetalae have been combined and in this work the combination-name applied is *Archichlamydeae*. These serve as examples of changes in nomenclature resulting from changes in view-points under increased knowledge.

It will be appropriate to give, in this introduction, a word or two to the later methods of plant-classification. Mention may be made, very briefly, of the basis of such classification. In the first place, a survey of the vegetable kingdom reveals that all the forms known to us may be thrown into two groups based upon the presence or absence of sexuality. We have, therefore, the two great divisions:

A. PROTOPHYTA: Plants in which sexuality has not been developed and in the ancestral line of which it is believed, from collateral evidence, that there are no sexually complete progenitors.

B. METAPHYTA: Plants which manifest sexuality or indicate by accessory characters that in their ancestral lines there have occurred sexually complete progenitors.

These two great divisions are not clearly delimited, owing to the presence of transition-forms which unite the lower group with the higher. Such a form is the well known *Ulothrix zonata* in which certain cells function indifferently as spores or gametes (marrying cells). Furthermore, the limits are obscured by such reduced forms of the Metaphyta, as undergoing retrograde metamorphosis, have lost their sexual characters and often resemble closely the upward-tending types of the Protophyta, which are acquiring sexual characters, or on the point of acquiring them, one might say. Such intermediate forms, whether rudimentary or reduced, render exact limitation of the two great divisions quite impracticable.

In similar fashion it is possible to arrange the Metaphyta in two subdivisions based upon the development of the fertilised egg. In the lower forms, after fertilisation, the egg proceeds to develop a plant like the parent, which produced the egg; in the higher forms, the egg undergoes a preliminary subdivision, the result of which is the ultimate development of few or very many cells, *each of which* is normally capable of producing a plant like one of the parents. We therefore have the two following subdivisions:

I. GAMOPHYTA: Metaphyta which normally develop sexual plants from their fertilised eggs without the interpolation of any spore-producing structure.

II. SPOROPHYTA: Metaphyta which normally subdivide the fertilised egg into a cellular structure, capable of growth, all or part of which consists, when mature, of spores, from which sexual plants are normally produced. Such a cellular structure is called a *sporophyte* or sporophytic plant.

Examples of I. are the lower *Zygophyta* and *Oöphyta* of Bessey (32), plants like the pond-scum (*Zygnema*) or the black-mould (*Rhizopus*, *Mucor*): examples of II. are too numerous to mention, for in this subdivision are all plants inclusive of, and higher than such algae as *Oedogonium*. A discussion of the conditions under which the Sporophyta probably originated and notes on their classification may be found in recent periodical literature (33, 34, 35, 36). It may be well to say that all of our subject-matter, in the following list is purely sporophytic.

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(32) **Bessey:** *Text Book of Botany*, 6 ed. (1889).

Continuing our classification of the vegetable kingdom, it will be found that we may again divide the Sporophyta into three alliances based upon the manner of development of the egg-organ or archegonium. This organ combines the functions of an ovary and uterus as commonly recognised in the mammalia. That is, it produces the egg, during the differentiation and maturation of its cellular structure, and it retains the egg as within a pouch, nourishing it through at least its first segmentations after fertilisation in view of which the egg developes as an embryo sporophyte. We may distinguish, then, the three following alliances of the Sporophyta:

(1). THALLOPHYTA: Sporophyta in which the egg-organ is not developed as a protective structure about the egg and in which there are no accessory characters that indicate an ancestral line containing egg-organ-producing progenitors.

(2). ARCHEGONIATAE: Sporophyta in which the egg-organ is present and functional.

(3). METASPERMAE: Sporophyta in which the egg-organ is aborted and no purely vegetative cells are to be found in either the male or female plants.

Examples of the Thallophyta, which is here defined in the narrower sense and does not include the Gamophyta or Protophyta—as is more customary—are to be looked for among the sea-weeds, fresh-water algae and especially among the higher, spore-fruit-producing fungi, such as the mushrooms, puffballs, etc.

Examples of the Archegoniatae are such algae as *Chara* and *Nitella*, the liverworts, mosses, ferns, pillworts, club-mosses, scouring-rushes. *Sigillarias*, *Lepidodendrons*, quillworts, cycads, pines and other conifers, and joint-firs. Transitional forms occur in the region of *Gnetum*, *Ephedra* and *Casuarina* leading over to the third and highest class of plants—the Metaspermae.

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(33) **Bowers:** *Homologous and Antithetic Alternation*, Ann. of Bot. iv. 347-370 (1890).

(34) **MacMillan:** *Sexual Immobility as a Cause for the Development of the Sporophyte*, Amer. Nat. xxv. 22-25 (1891).

(35) **Campbell:** *Relationships of the Archegoniata*, Bot. Gaz. xvi. 323-333 (1891).

(36) **MacMillan:** *Suggestions on the Classification of the Metaphyta*, Bot. Gaz. xvii. 108-113 (1892).

Examples of the Metaspermae may be selected from the great mass of plants which contain their seeds in a closed "ovary," better named *carpellum.* Such plants range in structure from such lower forms as *Salix* and *Typha* to the highly developed *Orchidaceae, Umbelliferae* and *Compositae*, including such plants as *Listera, Myrrhis* and *Hieracium.*

A more definite characterisation of the Metaspermae may be added to the diagnostic limitation given above.

Characters of the Metaspermae. The Metaspermae, other wise called Angiospermae, are those Sporophyta which produce constantly polymorphic species-forms, consisting of always bisexual, vegetatively degenerate, parasitic gametophytic plants and always *(a)* bivalent sporophytic plants, one of which is produced from a close-fertilised egg and develops an *endosperm* of the seed, while the other is produced from a cross-fertilised egg and develops the *embryo* of the seed,—which latter, in turn, upon the germination of the seed, normally resumes development and matures into a structure of high vegetative specialisation from which are ultimately developed, either one or both sizes of spores, and from these the sexual plants are respectively produced. The smaller spores or pollen-grains are produced numerously in special spore-cases *(sporangia)*, aggregated upon specially modified foliar or axillary structures called *stamens.* The larger spores are produced severally or, more commonly, singly, in a special sporangium (nucellus of ovule) surrounded with indusial membranes (ovular integuments) and the sorus (ovule) thus formed is borne in a closed foliar or axillary structure called a *pistil.* Of this closed pouch the actual seed-bearing cavity (ovary or *carpellum*) ripens into the fruit, which is always at first a closed structure The seed is a ripened sorus commonly detachable from the structure upon which it was produced. It contains within the modified indusial walls (seed-coats) two sporophytic plants of different valency. One, produced from an egg fertilised by the sperm nucleus from the pollen-tube, is alone termed the embryo The other, produced from a close-fertilised egg, is termed the endosperm, and is consumed by the embryo either during the ripening processes of the seed or during the germinating processes of the same.

It will be interesting to see how the Archispermae or lower seed-plants *(Gymnospermae)* differ from the Metaspermae. The fact that seeds are such distinct, easily defined bodies, in com mon parlance, has induced many botanists to use them indiscriminately as always of equivalent morphological value. Late research shows, however, beyond reasonable question that the seed of the Gymnosperms so-called and that of the Angiosperms are totally different structures, morphologically and in point of development. The *Archispermae* is a name given to those Archegoniatae which produce structures similar to the seeds of the Metaspermae. As will be seen this "seed" is another thing entirely and merits a different name, but it will be known here as the Archispermous seed. To show its character it will be well to give a description of the Archispermae, to be placed side by side with the above characterisation of the Metaspermae.

(a). Except in some *Orchidaceae?*

Characters of the Archispermae. The Archispermae, otherwise called Gymnospermae, are those Archegoniatae which produce constantly polymorphic species-forms consisting of always bisexual, vegetatively degenerate, parasitic gametophytic plants, and an always univalent sporophytic plant, produced from a cross-fertilised egg and capable of maturing into a structure of high vegetative specialisation upon which are developed either one or both sizes of spores, from which the sexual plants are respectively produced. The smaller spores or pollen-grains are produced in special spore-cases (*sporangia*), aggregated upon specially modified foliar structures called *stamens*. The larger spores are produced singly in special sporangia (nucellus of ovule), surrounded with an indusial membrane (ovular integument) and the sorus (ovule) thus formed is borne upon a foliar or axillary structure which is not closed around the ovule. The seed is a ripened sorus containing the vegetative portion of a female gametophytic plant (the "endosperm") and one or more strictly homologous and analogous sporophytic plants, developed from eggs borne in the egg-organs of the female plants and cross-fertilised by nuclei transmitted through the hyphal, vegetative pollen-tube from the endosporous spermary of the male plant. During, or a little before, germination of the seed the female plant is consumed by the developing sporophyte which alone is capable of renewal of growth-activity.

It is seen by a comparison of these two characterisations that while the seeds of Archispermae and Metaspermae unite in the point of forming sporophytes capable of further development, upon germination, they are utterly unlike in the formation of the nutritive tissues indifferently termed endosperm, in whichever way it is produced.

The production of "seeds" This is considered by the writer as of less taxonomic importance than the other points which have been mentioned, especially as the "seeds" are such different structures in the Archispermae and Metaspermae, However, the older botanists considered seeds as structures of great importance and in consequence the plants which produce seeds have been grouped together under the name of *Spermaphyta.* Linnaeus recognised this division, but gave it the name *Phanerogamia* under a mistaken notion that there was an analogy between two such widely diverse phenomena as pollenisation and fertilisation. The confusion brought about by this mistake has lasted until our own day. Later it was proposed to call these plants *Anthophyta,* or "plants which produce flowers." Those peculiar groupings of spore-bearing organs and accessory foliar structures which are termed flowers have, from their conspicuous character and high specialisation, always received particular attention and thus easily arose the early classification of vegetable organisms into flowering and flowerless plants—the *Phanerogamia* and *Cryptogamia* of Linneaus. These divisions were based, however, not upon fundamental morphological characters but upon accessory, and have been pretty generally superseded by systems of classification which present a truer perspective by emphasising the more fundamental structural and developmental characters.

The classification of Engler and Prantl. In the *Natuerlichen Pflanzenfamilien* Engler and Prantl adopt a classification based upon characters of somewhat different value from those discussed above. They divide the vegetable kingdom into four branches:—I. *Mycetozoa,* slime-moulds; II. *Thallophyta* (in the widest sense); III. *Embryophyta zoidiogama* (plants producing ciliated spermatozoids and building up sporophytic embryos); IV. *Embryophyta siphonogama* (plants producing pollen-tubes and building up sporophytic embryos). It will be seen that in this grouping a much greater merging of characters is permitted than in the one outlined above. In the first place, by way of individual criticism, the writer is inclined to suggest that the Mycetozoa are more properly classed with the animals. The presence of a contractile vesicle alone, need not determine animal rank among those organisms that Haeckel terms *Protista*; but its presence coupled with the absence of chlorophyll is strong argument. *Volvox globator*, with its coenobial growth, contractile vesicles and chlorophyll, may perhaps be safely set down as a plant. *Chondrioderma difforme*, with its plasmodial growth, its adelphotropic swarmspores, contractile vesicles and chlorophylless nutrition, may be as safely set down as an animal. This point admits, however, of extended argument, which would here be out of place, and the impression must not be received that it is proposed to give it an off-hand settlement.

With reference to the Thallophyta of Engler it is apparent that this group is a catch-all. Forms widely distinct in phylogeny, physiology and structure are indiscriminately lumped together. Plants which have been limited above as Protophyta, Gamophyta and Thallophyta (in the narrower sense) are here tumbled into one broad and vague category. It is true that a single clue will perhaps never lead one out of the labyrinth, but in the face of the charge, that embryologists are rashly endeavoring to base their classifications upon single and possibly uncertain groups of facts, it is urged that the Thallophyta of Engler has neither coherency nor limitability. It serves to delimit the algae in a manner which throws into low relief the probable relationship between the algae and the higher plants. From *Coleochaete* to *Riccia* is not a long step, and it should not be made to appear that a taxonomic chasm separates these forms. Apart from insanities of homologising, such as those of Bonavia (37), there are actual contact points between the "sea-weeds" and the lower *Hepaticae* and a natural classification should recognise these contact-points. The Embryophyta of Engler (and to Engler alone may be ascribed this classification) are very nearly co-extensive with the Sporophyta as limited above. *Oedogonium* and allied forms are, however, omitted and, in our belief, this does violence to the natural arrangement. Provision should be made for the union of these related plants, for in the belief of the writer, next to sexuality, the development of sporophytes is the most fundamental fact of plant-comparative-physiology. Again the division of the Sporophyta need not be made upon those structural gametophytic characters employed by Engler when he divides his Embryophyta into two series, based upon the development of ciliated spermatozoids in the lower and the production of pollen-tubes in the upper. The researches of Belajeff alone (38) serve to indicate how slight is the actual difference

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(37). **Bonavia:** *Phil. Notes on Botan. Subj.* (1892).

(38). **Belajeff:** *Zur Lehre von dem Pollenschlauche der Gymnospermen.* Bericht. Deutsch Botan. Gesellsch. IX. 274–286 (1891).

between such a condition as that of *Azolla caroliniana* among the *Zoidiogama* and *Taxus baccata* among the *Siphonogama*. Not only does it seem that the presence of pollen-tubes or of spermatozoids is a matter of secondary taxonomic importance, but it is perhaps hardly advisable to use a purely gametophytic character to limit off a group like the *Embryophyta siphonogama* which, to-day at least, comprises species described almost solely from sporophytic characters (*a*). While accepting the general arrangement of families as given in Engler's great work we cannot then, accept unquestioningly his broad groupings of the vegetable kingdom. However, it is possible that longer study will bring the classification of Engler into a more acceptable light. For the present it seems preferable to the writer to insist upon the basal importance of the *sporophytic* segmentations of plant ova and the subsidiary importance of spermatogametic and spermatogonial morphology.

There are a number of considerations in this general taxonomic summary which demand more complete examination, but enough has been said, it is hoped, to limit intelligibly though, to a certain extent, technically, the group of plants which are studied in the following pages. The Metaspermae are believed to be a natural group of plants properly co-ordinate with the Archegoniatae and Thallophyta (in the narrower sense). Reasons for breaking up the old Phanerogamiae, Anthophyta or Spermaphyta of the authors have been brought forward, and it is believed that many could be added. Certainly the wide difference between the seeds of Metaspermae and Archispermae stands squarely in the way of grouping them in the same grand division of the vegetable kingdom. Their separation has been proposed before (39), but not in exactly these terms. The sharp division of Sporophyta and Gamophyta has been proposed elsewhere by the writer (39½), with, however, a somewhat different limitation of the terms. Attention is directed particularly, in the preceding pages, to the characterisations of Metaspermae and Archispermae, which have the merit at least of being restatements of facts which are generally to be looked for in scattered corners of morphological treatises. These characterisations are different in essential particulars from those usually given, which are based for the most part upon

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(*a*). See division into Protosporophyta, Eusporophyta and Metasporophyta in (39½) cited below.

(39). **Goebel:** *Outlines of Classification and Special Morphology.* Eng. Tran., Introd. (1887).

(39½). **MacMillan:** *Suggestions on the Classification of the Metaphyta.* Bot. Gaz. (1892).

such secondary points as the structure of the carpels. In the lines laid down above it will be seen that the *nature* of the seed is considered to be of prime morphological importance. This view, I am inclined to think, will repay study, for it serves to clear away some mists which should have been dispelled long ago, had it not happened that ancient terminalogies and conservative taxonomies stood directly athwart the light.

Subdivisions of the Metaspermae. The recent researches of Treub (40) have made necessary a new subdivision of the Metaspermae more fundamental than that into the Monocotyledones and Dicotyledones. Upon examination of members of that peculiar Australasian genus, *Casuarina*, it was found that, unlike any other known Metaspermae, they were devoid of micropylar canals, and that the mature ovules split along the chalazal line and through this cleft the pollen-tube was permitted to enter. It is then proposed by Treub to divide Metaspermae into two divisions, separating the more *Selaginella*-like *Casuarinaceae* from the rest under the name of *Chalazagameae*. Plants of this division are comprised under the single rather small genus, *Casuarina*. All the rest of the Metaspermae unite, so far as known, in having a particular opening, the micropylar canal, penetrating the ovular membranes and permitting the end of the pollen-tube to be appressed against the embryo-sac (*megaspore*) in which the two eggs are developed which produce respectively the endosperm and embryo of the seed. This division is termed by Treub, *Porogameae*.

The Porogameae are divided into the Monocotyledones and Dicotyledones. In the first division the embryo undergoes a distinct type of segmentation-stages (41) and in most cases developes the apical meristem from two initials instead of from three (42). Moreover there is but one cotyledonary leaf developed.

In the Dicotyledones there are commonly three initials for the apical meristem, so that the plerome, dermatogen and periblem layers has each its own mother-cell. The segmentation stages are peculiar and moreover there are two cotyledonary leaves developed.

The Monocotyledones do not admit of further subdivisions of higher grade than the orders, as described and limited well by

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(40). **Treub:** *Ann. Jard. Buitenz.* X. 145-231 (1891).

(41). **Hanstein:** *Entwickelung des Keimes der Monokotylen und Dikotylen.* pp. 1—112, taf. 1-13 (1870).

(42), **Van Tieghem and Douliot:** *Recherch Comp. Endogen. Member.* Ann. Sci. Nat. Botan., 7, VIII, 1 (1888), and **Douliot** *l. c.* 7, XI, 283 (1891).

Luerssen (43) or, not so naturally, by Van Tieghem (44). The Dicotyledones however admit of arrangement in two distinct divisions, based upon the morphological characters of the perianth. These are as follows:

(*a*). *Archichlamydeae:* Perianth wanting or made up of incoherent leaves owing to the failure of parts in the same foliar circle to undergo fusions.

(*b*). *Metachlamydeae:* Perianth exhibiting fusions between parts of the same foliar order or indicating, by accessory characters, an ancestral line in which such fusions must have taken place.

Under the classification above worked out the plants of the following list are arranged. It must be remembered that the families follow each other in precisely the order laid down in the monographers' work, in Engler and Prantl. Thus it is believed, a system as natural as available has been adopted, and the arrangement of genera and species is made to conform so far as may be practicable to the general order.

It is not improbable that the epoch-marking work of Engler and Prantl may be translated into English, but even if it is not it must for at least a decade stand as the highest and most generally accepted authority. And it is for this reason that I have preferred to follow its arrangement rather than the Benthamian which is steadily and irrevocably losing ground.

Some citations of important literature not referred to in the body of the above discussion, are here added to indicate to students where to look for the memoirs and volumes which have done so much to bring to light the four-fold complexity of our common higher plants. It will be seen from a consideration of the metaspermic characters adduced above that what we call an oak, the *Quercus macrocarpa*, for example, is not an individual like an animal, but a group of four individuals of which one only is vegetatively important while the other three, comprising both the sexual plants and one of the two sexless plants, are reduced into a condition of dependence which permits them, in ordinary parlance and in many treatises, to be discussed as organs. This condition might easily arise as a result of high differentiation and polymorphism and something like it, on a much simpler scale, is seen in animals like the copepods, in certain species of which the male is very much smaller than the female and lives parasitically upon the body of the larger crustacean. But it is in the higher plants that such polymorphism reaches its unparalleled development, and in this sense, at least, we find that the higher plants are the most complicated of organisms. Only a partial list of books and memoirs can be given here.

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(43). **Luerssen:** *Medicin.-Pharmac. Bot.*, Vol. I, (1882).

(44) **Van Tieghem:** *Traité de Botan.*, Vol. II, (1891).

Literature Bearing upon Metaspermic Polymorphism.

Hofmeister: Vergl. Untersuch der Keimung (1851).
“ : Entsteh. Embryo der Phanerogamen (1849).
“ : N. Beitr. Kenntn. Embryobild. Phan. (1859–61).
Strasburger: Befruchtung und Zelltheilung (1878).
“ : Kern- und Zelltheilung (1808).
“ : Angiospermen u. Gymnospermen (1879).
Hofmeister: Historisch. Beitr., Flora, 125 (1875).
Warming: De l’Ovule, Ann. Sci. Nat. Botan., 6, V. 176 (1878).
Vesque: Sur Devel. Sac Embryonaire, Ann. Sci. Nat., 6, VI. 237 (1879).
Mann: Embryo-Sac of Myosurus, Proc. Bot. Soc. Edin. (1891).
Farmer: Isoetes, Ann. of Bot. V. 59 (1890).
Guignard: Embryogen. Legum., Ann. Sci. Nat. Botan., 6, XII (1881).
“ : Sac Embryonaire, Ann. Sci. Nat. Botan., 6, XII, 136 (1882).
“ : Etud. Phen. Morph. Fecund., Act. Bot. Congr. (1889).
“ : Nouv. Et. Fecund., Ann. Sci. Nat. Bot., 7, XIV (1891).
Strasburger: N. Untersuch. Befrucht. Phan. (1884).
Minot: Phenom. of Impregnation in Animals, Proc. Bost. Soc. Nat. Hist., XIX 165 (1877).
Balfour: Phen. Matur. Ovum, Q. J. Micro. Sci., XVIII 109, (1878).
Van Beneden: Recherch. Matur. Ov. et Fecund., Arch. Biol. (1883).
Weissmann: Essays on Heredity, Eng. Tran. (1889).
Geddes and Thompson: Evolution of Sex (1890).
Schenck: Handbuch Botan.
Campbell: Pilularia Globulifera, Ann. of Bot., II, 247 (1887).
“ : Isoetes, Ann. of Bot., V, 231 (1891).
Hartog: Problems of Reproduction, Q. J. Micro. Sci., XXXIII, (1891).
Berthold: Protoplasmamechanik (1886).
Le Monnier: Journ. de Botan., I, 140 (1887).
Treub: Recherch. Cycadeae, Ann. Sci. Nat., 6 XII, 212 (1881).
Warming: Systematisch Botanik (1890), Deutsch. Ausgabe.
Pax: Allgemein. Morphol. der Pflanz. (1890).
Strasburger: Coniferen und Gnetaceen (1872).
Fischer: Embryosackentn. Angiosp., Jen. Zeitschr. f. Naturw. (1880).
Mellink: Ontwik. v. d. Keimzak bij Angiosp., Diss. Leid. (1880).
Tulasne: Etud. d’Embryogenie Veg., Ann. Sci. Nat. Bot., 3, XII (1849).
Hanstein: Entwick. Keimes d. Monocot. u. Dicot. (1870).
Hegelmaier: Vergleich. Untersuch. u. d. Entwick. Dicot. Keime (1878).
Treub: Embryogenie Orchidaceae (1878).

Many other titles might be added to this list, but those cited will put any student into contact with the general literature. Most of these works do not devote themselves solely to the subject in the caption, but all serve to illuminate it more or less. Works of purely historical value, such as those of Brongniart, Amici, R. Brown, Schacht, Radlkofer, Karsten, et al., have not been cited, for it is not my intention to give in this place a complete bibliography of the subject, but only to cite enough works to enable readers to come in contact with the original sources.

Statistical discussions. The chapters following the list take up in order certain statistical investigations based upon facts collated in the list itself. No complete statistical investigation can be made of even this limited area, the Minnesota valley, in the present advancement of our knowledge. There are, however, data enough at hand to determine certain characters of our flora. It is believed that the points of view from which the statistics are gathered, and the principles underlying their tabulation, enable one to present some facts less barren and meaningless than those commonly put forward in such chapters. By keeping steadily in view the facts discussed above, in relation to the difference between natural and artificial districts, and with a constant comprehension of the indubitable fact that one can not consider even a natural district apart from surrounding districts, the writer has attempted to penetrate to some of the inner facts which become accessible in such a labor as has been undertaken. It is believed that the characters of the Minnesota valley flora thus determined throw some unexpected light upon the general conditions of plant distribution in this central region of the continent. And while some of the conclusions may seem simple to trained geographical botanists, it must be recalled by them that this work is not primarily addressed to any coterie of *savants* in some special line of science, but to the general public of Minnesota, under whose ultimate sanction, and by whose open-minded comprehension of the value of scientific knowledge in all departments of human activity, this Geological and Natural History Survey has been established, developed and directed.

LIST OF
HIGHER SEED-PRODUCING PLANTS,

(METASPERMÆ),

NATIVE TO THE VALLEY OF THE MINNESOTA.

POROGAMEÆ. MONOCOTYLEDONES.

I. TYPHACEÆ. Cat Tail Family.

Endlicher, *Gen. Pl.* 241 (1840); Bentham and Hooker, *Gen. Plant.* III. 954 (1883); Engler in *Engler and Prantl, Nat. Pflanz.*, 2. I. 183 (1887).

Genera: 1. Swamps of tropical and temperate regions.
Species: 12 living; 2 fossil.

TYPHA Linn. Gen. 707 (1737).

Benth. and Hook., *Gen. Pl.* III. 955; Durand, *Ind. Gen. Phan.* 445. Engler and Prantl, *Nat. Pflanz.* 2, I. 186 (Solms); Schenck, *Palæophyt.* 376.

Living species, 12; tropical and temperate regions: Europe, 9; Russian Europe, 5; Russia, 5; N. America, 2; So. Sts., 1; Canada, 2; California, 2; E. Sts., 2; Rocky Mts., 1.

Fossil species: 2; Tertiary, France. Samland. (*A. Br., Stur*)

Typha latifolia Linn. Spec. 971 (1753).

T. major Curt. Fl. Lond. III, 61 (1777–1787).
T. angustifolia Rich. Tent. Fl. Abyss. II, 350 (1851).
T. latifolia var. *elongata* Dudl. Fl. Cay. 102 (1886).

Wats. and Coult., Gray's Man., 6 ed. 547; Britt., Fl. N. J. 251; Upham, Fl. Minn., 135; Mac., Fl. Can. II. 69; Coult., Fl. Colo., 359; Chap., Fl. So. St. 443; Webb., Fl. Neb. 98; Watson, Fl. Calif. II, 188; Nym., Fl. Eur.; Led., Fl. Ross., IV. 1; Hook., Fl. Gt. Brit 442; Richt., Pl. Eur. 9; Herd., Fl. Eur. Russ. 122; Engl.. Nat. Pflanz. II. 1, 186; Wats., King Exp. 337; Cov., Fl, Ark. 227; Hart., Fl. Scand. I. 440.

Europe, Asia and N. Africa.

North America: all Can. to N. Eng. and Fla., W. to Mts. and Sacramento, Calif.

Minn. valley: Throughout; marshes, swamps and edges of lakes.

HERB.; *Sheldon 247*, Lake Washington, Blue Earth Co.; *Taylor 699*, Minnesota Lake; *Ballard 262*, Jordan, Scott Co.; *Taylor 408*, Janesville; *Sandberg 527*, Chisago Lake; *Herrick 280*, Minneapolis; *Kassube 222*, Minneapolis.

II. SPARGANIACEAE. Burr-Reed Family.

Endlicher, *Gen. Pl.* 241 (1840); Benth. and Hook., *Gen. Pl.* III. 955 (1883); Engler in *Engl. and Prantl, Nat. Pflanz.* 2, I. 192 (1887).

Genera: 1; temperate and colder regions of Northern Hemisphere; Australia and New Zealand; swamps and marshes.

Species: 6–8 living; 2–3 extinct.

SPARGANIUM LINN. Gen. 706 (1737).

Platanaria S. F. Gray, *Arr.* II. 39 (1821).

Benth. and Hook., *Gen. Pl.* III. 955; Durand, *Ind. Gen. Phan.* 445; Engler and Prantl, *Nat. Pflanz.* 2, I. 193 (Engler); Schenck, *Palaeophyt.*, 376–377.

Living species: 6–8; temperate and colder regions of N hemisphere, Australia and New Zealand. Canada, 6; Calif., 2; E. Sts., 3.

Fossil species: 5–10 described; 2–3 distinct; Tertiary, widely distributed.

Sparganium simplex HUDS. Fl. Angl, ed. 2, 401 (1762).

S. erectum var B. LINN. Spec. 971 (1753).
S. erectum WAHL. Fl. Suec. 1020 (1824–26).
S. simplex var *nuttallii* ENGELM. Gray's Man., 5 ed. 481 (1867).

Wats. and Coult., Gray's Man., 6 ed. 548; Upham, Fl. Minn. 135; Watson, Fl. Calif., II. 188; Coult., Fl. Colo. 359; Mac., Fl. Can., II. 70, 367; Nym., Fl. Eur.; Led., Fl. Ross, IV. 4; Hook., Fl. Gt. Brit. 422; Richt.. Pl. Eur. 10; Herd., Fl. Eur. Russ. 122; Engl., Nat. Pflanz., II. 1, 193; Roth., Wheel. Exp. 269; Cov., Fl. Ark. 227? Hart, Fl. Scand., I, 440.

Europe; Siberia to Dahuria.

North America: Sierras to Oregon; throughout Can. to Ft. Franklin on Mackenzie. Newf. and Vancouver; S. to Minn., Mich., N. J.

Minn. valley: N. E. district; infrequent; swamps, marshes and edges of lakes.

HERB.: *Roberts 124*, Agate Bay; *Sandberg 529*, Red Wing; *var. fluitans — Bailey 85*, Vermilion Lake; *MacM. and Sheld. 27*, Cass Co.

Sparganium androcladum (ENGELM.) MORONG, *Torr. Bull* XV. 78 (1888).

S. simplex var. *androcladum* ENGELM. Gray's Man. 5 ed. 481 (1867).
S. ramosum AUCT. AMER. in part.

Wats. and Coult., Gray's Man. 6 ed. 548; Britt., Fl. N. J. 252; Upham, Fl. Minn. 136; Coult., Fl. Colo. 360; Mac., Fl. Can., II. 60; Cov., Fl. Ark. 227.

North America: N. S., N. Br., Q., Ont., Man., Saskatchewan and Vancouver; S. to Colo , Minn., Mo., N. Eng., N. J. and Fla.

Minn. valley: Reported from the S. E. district, rare; swamps, marshes and edges of lakes.

Sparganium eurycarpum ENGELM. Gray's Man. 2d ed. (1852).

Wats. and Coult., Gray's Man. 6 ed. 548; Britt., Fl. N. J. 252; Webb., Fl. Neb. 98; Mac., Fl. Can. II. 69 ; Wats., Fl. Calif. II. 188 ; Coult., Fl. Colo. 359; Chap., Fl. So. St. 443; Upham, Fl. Minn. 135; Wats., King Exp. 337; Roth., Wheel. Exp. 269.

North America: Newf., N. S., Ont., Man. to Humboldt River, Nev.; S. to N. Eng., N. J., Va.; W. to Minn., Neb. and Kan.

Minn. valley: Throughout; swamps, marshes and edges of lakes.

HERB.: *Sheldon 253*, Lake Washington, Le Sueur Co.; *Taylor 1109*, Glenwood; *Taylor 522*, Mud Lake; *Taylor 673*, Minnesota Lake; *Sheldon 991*, Cross Lake, Brown Co.; *Sheldon 644*, Waseca; *Ballard 111*, Shakopee; *Sandberg 528*, Red Wing; *Holzinger 263*, Winona Co.

III. POTAMOGETONACEAE. Pond-Weed Family.

Zosteráceae Lindl. *Veg. King.* 145 (1846) p. p.

Najadaceae Benth. and Hook., *Gen. Pl.* III. 1009 (1883); (Excl. Tribus I, *Juncagineae.* Tribus II, *Apogetoneae.* Tribus VII, *Najadeae*); Ascherson in *Engl. and Prantl, Nat. Pflanz.* 2, I. 194 (1889).

Genera: 9 living; 3 extinct; cosmopolitan; aquatic, principally in fresh water.

Species: 75± living; 20–30 ? extinct.

POTAMOGETON LINN. Gen. 92 (1737)

Peltopsis Raf. *Jour. Phys.* LXXXIX, 101 (1819).

Spirillus and **Groenlandica** J. Gay, *Comptes Rendus*, Avr. (1854).

Benth. and Hook., *Gen. Pl.* III, 1014; Durand, *Ind. Gen. Phan.* 453; Engler and Prantl, *Nat. Pflanz.* 2, I, 207; Schenck, *Palaeophyt.*, 381–383.

Living species: 50±; fresh and rarely brackish waters; cosmopolitan. Russia, 25; Europe, 38; N. America, 35 (15 endemic); California, 19; Canada, 27; E. Sts., 29; Rocky Mts., 11; Pl. King., 10; Pl. Wheel., 4; S. Sts., 10.

Fossil species: Tertiary; numerous forms described but all rather doubtful; 2 sp. clearer than the rest. Oeningen (*A. Br.*); S. France (*Saporta*).

Potamogeton natans LINN. Spec. 126 (1753).

Wats. and Coult., Gray's Man. 6 ed. 558; Britt., Fl. N. J. 257; Webb., Fl. Neb. 97; Upham, Fl. Minn. 136; Chap., Fl. So. St. 446; Wats., Fl. Calif. II, 195; Mac., Fl. Can. II, 81; Coult., Fl. Colo. 362; Nym., Fl. Eur.; Led., Fl. Ross. IV, 23; Hook., Fl. Gt. Brit. 431; Richt., Pl. Eur. 11; Herd., Fl. Eur. Russ. 124; Engl., Ascherson, Nat. Pflanz. II, 1 207; Wats., King Exp 337; Cov. Fl. Ark. 228; Hart, Fl. Scand. I, 431; Rothr., Alask. 445.

Europe; Asia; Australia; Africa.

North America: Anticosti, N. S., N. Br., Q., Ont., Owen Sound to Man. and Lake Athabasca; N. to Hudson Bay and Alaska; Vancouver; S. to Calif., Nev., Utah, N. Mex.; E. to N. Eng., N. J. and Fla.

Minn. valley: Throughout; abundant; ponds, lakes and sluggish streams.

HERB.: *Ballard, 782*, Swan Lake, Carver Co.; *Ballard, 587*, Crystal Lake, Scott Co.; *Ballard, 858*, Page Lake, Carver Co.; *Ballard 276*, Jordan, Scott Co.; *Ballard 321*, Belle Plaine; *Ballard 431*, Prior's Lake, Scott Co.; *Sheldon 723*, Cottonwood river, near Sleepy-Eye; *Ballard 900*, Waconia; *Taylor 1072*, Douglas Co.; *Sheldon 273*, Duck Lake, Blue Earth Co.; *Sheldon 1088*, Springfield; *Kassube 223*, Rocky Lake; *Herrick 281*, Minnetonka; *Holzinger 265*, Winona Co.; *Bailey 391*, Mud Lake; *Sandberg 531*, Chisago Co.; *Herb. Sheld. 1693*, Minneapolis.

Potamogeton fluitans ROTH. Fl. Germ. I, 72 (1788).

P. natans var. *fluitans* CHAM. Adnot. 4 (1815).
P. petiolaris PR. Del. Pr. I, 151 (1822).
P. natans var. *angustatus* M. and K. Röhl. Fl. D. I, 836 (1823).
P. oblongus MEY. Chlor. Hann. 519 (1836).
?*P. lonchites* TUCKERM. Am. Jour. Sci. 2, VI, 226 (1848).

Wats. and Coult., Gray's Man. 6 ed. 560; Britt., Fl. N. J. 257; Upham, Fl. Minn. 136; Mac., Fl. Can. II, 83, 369; Wats., Fl. Calif. II, 196; Coult., Fl. Colo. 363; Chap., Fl. So. St. 446; Hook., Fl. Gt. Brit., 432?; Richt., Pl. Eur. 12; Herd., Fl. Eur. Russ. 124; Engl., Ascherson, Nat. Pflanz. II, 1, 207; Wats., King Exp. 337; Hart., Fl. Scand. I, 431; Webb, Appx. Neb. 22.

All Europe: cosmopolitan.

North America: N. Br., Ont. to N. J.; W. to Minn., Iowa, Neb., Mex.; also Washington to Nevada.

Minn. valley: Reported from S. central district; probably local.

Potamogeton amplifolius TUCKERM. Am. Jour. Sci. 2, VI. 225 (1848).

Wats. and Coult., Gray's Man. 6 ed. 561; Britt., Fl. N. J. 257; Upham, Fl. Minn. 136; Wats., Fl. Calif. II, 196; Mac., Fl. Can. II, 84; Coult., Fl. Colo. 363; Chap., Suppl. So St. 652; Cov., Fl. Ark. 228; Webb., Appx. Neb. 22.

North America: Ont., N. Superior reg., Man. to Vancouver, Oregon and Calif.; S. to N. Eng., N. J. and mts. of Ga.; W. to Minn., Neb., Kan , Ark., N. Mex.

Minn. valley: Forest district; frequent; lakes and ponds.

HERB.: *Sheldon 318*, Madison, Blue Earth Co.; *Ballard 599*, Prior's Lake, Scott Co.; *Ballard 606*, Prior's Lake, Scott Co.; *Sandberg 532*, Chisago Co.

Potamogeton perfoliatus LINN. Spec. 126 (1753).

P. loeselii R. and S. Syst. III, 508 (1818).
Peltopsis perfoliata RAF. Jour. Phys. LXXXIX, 102 (1819).
Potamogeton crispus DARL. Fl. Cestr. 23 (1826).

Wats. and Coult , Gray's Man. 6 ed. 562; Britt., Fl. N. J. 258; Upham, Fl. Minn. 137; Mac., Fl. Can. II, 85; Wats., Fl. Calif. II, 197; Chap., Fl. So. St. 446; Coult., Fl. Colo. 363; Hook., Fl. Gt. Brit., 434; Nym. Fl. Eur.; Led., Fl. Ross. IV, 27; Trautv., Fl. Sib. 113; Richt., Pl. Eur. 13; Herd., Fl. Eur. Russ. 124; Engl., Ascherson, Nat. Pflanz. II, 1, 207; Wats., King Exp, 337; Roth., Wheel., Exp. 268?; Hart., Fl. Scand. I, 434.

Europe; all Russia and Siberia; N. Africa; Australia.

North America: N. S., N. Br., Anticosti, Q., Ont., to valley of Slave river, N. W. T.; S. to N. Eng., N. J., Fla.; W. to Minn., Iowa and Colo.?

Minn. valley: Throughout; abundant; ponds and lakes.

HERB.: *Ballard 601*, Prior's Lake, Scott Co.; *Ballard 865*, Page Lake, Carver Co.; *Taylor 67*, Elysian; *Taylor 140*, Janesville; *Taylor 1050*, Glenwood; *Ballard 449*, Prior's Lake, Scott Co.; *Sheldon 440*, Buffalo Lake, Waseca Co.; *Oestlund 185*, Minnehaha; *Herrick 284*, Minnetonka; *Roberts 125*, Knife river; *Herb. Sheld. 1752*, Lake Johanna, Ramsey Co.

Potamogeton heterophyllos SCHREB. Spic. 21 (1771).

P. hybridus PENTAGN. Inst. II, 289 (1787).
P. gramineus ROTH. Tent. Fl. Germ. I, 74 (1788).
P. palustris TEESD. Trans. Linn. Soc. V, 43 (1800).
P. gramineus var. *heterophyllos* FRIES, Nov. Fl. Suec. 35 (1828).
P. paucifolius OP. Böhm. Fl. 23 (1823).
P. proteus f. *heterophyllos* CHAM. and SCHLECHT. Linn. II, 201 (1827).

Wats. and Coult., Gray's Man. 6 ed. 561; Britt., Fl. N. J. 257?; Upham, Fl. Minn. 136; Coult., Fl. Colo. 363; Mac., Fl. Can. II, 84; Chap., Fl. So. St.

446; Wats., Fl. Calif. II, 196; Hook., Fl. Gt. Brit., 432; Richt., Pl. Eur. 13; Herd., Fl. Eur. Russ. 124; Engl., Ascherson, Nat. Pflanz. II, 1, 207; Mac., Fl. Can. II, 270; Roth., Wheel., Exp. 268; Hart., Fl. Scand. I, 432.

Europe; N. Asia.

North America: Q., Saskatchewan and Rocky Mts. to Vancouver; S. to Yellowstone and Mono Pass, Calif.; E. to N. Eng., N. J. and N. Car.

Minn. valley: Forest district and probably W.; ponds and lakes.

HERB.: *Ballard 899*, Waconia; *Ballard 860*, Page Lake, Carver Co.; *Ballard 859*, Page Lake, Carver Co.; *Bailey in herb. Morong*, Vermilion Lake.

Potamogeton gramineus LINN. var. **zizii** (ROTH.) M. and K. in Röhl. Fl. D. I, 845 (1823).

P. zizii ROTH. Tent. Fl. Germ. I. 75 (1788).
P. angustifolius OP. Böhm. Gerd. 23 (1823).
P. proteus f. *zizii* CHAM. and SCHLECHT. Linn. II. 201 (1827).
P. lucens var. *minor* UPHAM, Fl. Minn. 136 (1883).

Wats. and Coult., Gray's Man. 6 ed. 561; Britt., Fl. N. J. 258; Mac., Fl. Can. II, 85; Hook., Fl. Gt. Brit. 433; Richt., Pl. Eur. 14; Mac., Fl. Can. II, 370; Hart., Fl. Scand. I, 433.

Europe; Asia?

North America: Q., Ont. to N. Eng., N. J. and Fla.; W. to Minn. and Kan.

Minn. valley: N. E. district, rare; ponds and lakes.

HERB.: *Herrick 283*, Minnetonka.

Potamogeton illinoensis MORONG, Bot. Gaz. V. (1880).

Wats. and Coult., Gray's Man. 6 ed. 561; Upham, Fl. Minn. 137.

North America: W. N. Y. to Ills., Iowa and Minn.

Minn. valley: Reported from S. edge; ponds and lakes.

Potamogeton pusillus LINN. Spec. 127 (1753).

P. acutifolius PR. Fl. Cech. 37 (1819).
P. gramineus MER. Fl. Par. II, 70 (1836).
P. berchtholdii FIEB. in Berchth. Fl. Böhm. II, 277 (1839).
P. mucronatus NYM. Syll. 387 (1854–55).

Wats. and Coult., Gray's Man. 6 ed. 563; Britt., Fl. N. J. 258; Upham, Fl. Minn. 137; Mac., Fl. Can. II. 87; Wats., Fl. Calif. II. 198; Coult., Fl. Colo. 363; Hook., Fl. Gt. Brit. 435; Led., Fl. Ross. IV. 29; Richt., Pl. Eur. 30; Herd., Fl. Eur. Russ. 124; Engl. Ascherson, Nat. Pflanz. II. 1, 208; Wats., King Exp. 338; Hart., Fl. Scand. I, 435.

N. Europe; N. Africa; N. and S. America; N. Asia.

North America: N. S., N. Br., Q., Ont. to Man., Saskatchewan, Prairie region to Brit. Col., lat. 55° N.; S. to N. Eng., N. J., Minn., Mo., Uintah Mts., Santa Cruz and the Tuolumne.

Minn. valley: Throughout; ponds and lakes; abundant.

HERB.: *Taylor 105,* Janesville; *Ballard 447,* Prior's Lake, Scott Co.; *Herrick 285,* Minnetonka; *Bailey 394,* Mud Lake; *Bailey 538,* Long Lake—*var. tenuissimus; Bailey 369,* Vermilion Lake, *in herb. Morong.*

Potamogeton rutilus WOLFG. Schult. Mant. III, 362 (1827).

P. compressus SM. Engl. Bot. t. 418 (1796) not Linn.
P. pusillus var. *major* FRIES, Nov. Ed. II, 48 (1828).
P. friesii RUPR. Ber. Russ. Rch. IV, 43 (1845).
P. oederi MEY. Fl. Hann. 536 (1849).
P. major MORONG in Litt. (1892 .

Wats. and Coult., Gray's Man. 6 ed. 563; Mac., Fl. Can. II, 88, 371; Led., Fl. Ross. IV. 30; Hook., Fl. Gt. Brit. 435; Herd., Fl. Eur. Russ. 124; Engl., Asch., Nat. Pflanz. 2, I. 208; Richt., Pl. Eur. 15.

Middle Europe and Asia; N. Africa.

North America: N. S., Anticosti, N. Br., Q., N. E. T., Man. and Brit. Col.; S. to W. N. Y., Mich. and Minn.

Minn. valley: S. and N. E. districts; rare; ponds and lakes.

HERB.: *Bailey 369,* Mud Lake; *Cratty,* State Line, S. edge, *Herb. Morong.*

Potamogeton pectinatus LINN. Spec. 127 (1753).

P. interruptus KIT. in Schultes Ostr. Fl. I, 328 (1794).
P. vaillantii R. and S. Syst. III, 514 (1818).
P. fasciculatus WOLFG. in Schultes Mant. III, 364 (1827).
P. filicaulis SCHUR. Enum. 633 (1866).

Wats. and Coult., Gray's Man. 6 ed. 564; Britt., Fl. N. J. 258; Coult., Fl. Colo. 364; Mac., Fl. Can. II. 88; Chap., Fl. So. St. 445; Upham, Fl. Minn. 137; Wats., Fl. Calif. II. 198; Trautv., Fl. Sib. 113; Led., Fl. Ross. IV. 30; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 436; Richt., Pl. Eur. 15; Herd., Fl. Eur. Russ. 124; Engl., Ascherson, Nat. Pflanz. II, 1, 208; Wats., King Exp. 338; Roth. Wheel. Exp. 288; Hart., Fl. Scand. I. 437; Webb., Appx.. Neb. 22.

Europe; N. Asia to N. W. India; Australia.

North America: Greenland and N. S. to Man., Rocky Mts., Hudson Bay; Brit. Col. and Vancouver; N. to lat. 62°; S. to Fla. and W. to Rockies through U. S.; also Washington to S. Calif., Nev. and Utah.

Minn. valley: Throughout; frequent; ponds and lakes.

HERB.: *Taylor 104,* Glenwood; *Sheldon 439,* Buffalo Lake, Waseca Co.; *Taylor 643,* Minnesota Lake; *Sheldon 871,* Sleepy Eye; *Oestlund 186,* Minnehaha; *Holzinger 268,* Winona Co.; *Bailey 124,* Vermilion Lake.

Potamogeton lucens LINN. Spec. 126 (1753).

P. serratus WEBB. Pr. Fl. Holst. 16 (1780).
P. lucidus GULDENST. It. I. 76 (1787).

P. acuminatus SCHUM. Enum. Säll. I, 49 (1801).
P. volhynicus BESS., R. and S. Syst. III, 509 (1818).
P. cornutus PR. Fl. Cech. 37 (1819).
P. caudatus SEID. Op. Böhm. Gew. 23 (1823).
P. proteus f. *lucens* CHAM. and SCHLECHT. Linn. II, 197 (1827).

Wats. and Coult., Gray's Man. 6 ed. 562; Upham, Fl. Minn. 136; Mac., Fl. Can. II. 85; Chap., Fl. So. St. 446?; Wats., Fl. Calif. II. 196; Coult., Fl. Colo. 363; Hook., Fl. Gt. Brit. 432; Nym., Fl. Eur.: Led., Fl. Ross. IV. 26; Richt., Pl. Eur. 14; Herd., Fl. Eur. Russ. 124; Hart., Fl. Scand. I 433.

Europe; Asia; N. Africa; Australia; W. Indies.

North America: N. S., Q., Ont. to Keewatin; S. to Minn., Ark., N. Mex.; E. to N. Eng. and Fla?.; also California.

Minn. valley: Throughout; infrequent; ponds and lakes.

HERB.: *Taylor 1002,* Glenwood; *Oestlund 184,* Minnehaha; *Herrick 282,* Minnetonka; *Ballard 600,* Prior's Lake, Scott Co.

Potamogeton praelongus WULF. Roem. Arch. III, 331 (1803-5).

P. lucens WEBB. Prim. Holst. 15 (1780) not Linn.
P. flexicaule DETH. Strel. Anz. n 50 (1809).
P. flexuosus (SCHL. and) WRED. Meckl. Fl. I (1811).
P. acuminatus WAHL. Fl. Ups. 116 (1820).

Wats. and Coult., Gray's Man. 6 ed. 562; Britt., Fl. N. J. 258; Richt., Pl. Eur. 14; Mac., Fl. Can. II. 85; Hook., Fl. Gt. Brit. 433; Nym., Fl. Eur., Wats., Fl. Calif. II. 197.

Europe.

North America: N. S. to Vancouver; S. to Mass., Minn., Iowa.

Minn. valley: Forest district; ponds and lakes or sluggish streams.

HERB.: *Sheldon 319,* Madison Lake; *Bailey 404,* Burntside Lake.

Potamogeton lanceolatus SM. Engl. Bot. 1985 (1808).

P. perfoliatus var. *lanceolatus* ROBBINS, Gray's Man. 5 ed. (1868).
P. perfoliatus var. *richardsonii* BENNETT, Mac. Fl. Can. II, 370 (1890) in part?

Wats. and Coult., Gray's Man. 6 ed. 562; Coult., Fl. Colo. 363; Wats., Fl. Calif. II. 197; Mac., Fl. Can. II. 86; Upham, Fl. Minn. 137; Hook., Fl. Gt. Brit. 434; Richt., Pl. Eur. 13; Roth., Wheel. Exp. 268?.

Europe.

North America: Ont. to Rockies and 62° N. lat.; S. to N. J., Fla. and N. Mex.; W. to Pac. coast and Yellowstone basin.

Minn. valley: Forest district and probably W.; ponds and streams.

HERB.: *Holzinger 266,* Winona Co.; *Bailey 149,* Vermilion Lake, and *Sandberg,* Hennepin Co., in *herb. Morong.*

Potamogeton zosteraefolius SCHUM. Fl. Säll. I, 50 (1801).
?*P. complanatus* WILLD, Berl. Mag. 297 (1809).
?*P. cuspidatus* SCHRAD. Ex. Sm. Engl. Fl. I, 234 (1824).
P. zosterophyllus DUM. Fl. Belg. 164 (1827).
P. compressus. AUCT. AM., not Linn.

Wats. and Coult., Gray's Man. 6 ed. 562; Britt., Fl. N. J. 258; Upham, Fl. Minn. 137; Mac., Fl. Can. II. 86; Wats., Fl. Calif. II. 197; Hook., Fl. Gt. Brit. 434; Led., Fl. Ross. IV. 29; Nym., Fl. Eur.; Richt., Pl. Eur. 14; Herd., Fl. Eur. Russ. 124, 126; Cov., Fl. Ark. 228; Webb , Appx , Neb. 22.

Europe; N. Asia to Baikal Mts.

North America: N. Br., Ont., L. Superior region and N. Saskatchewan to 57° N. lat.; Oregon and N. Calif.; N. Eng. to N. J.; W. to Minn., Dak., Iowa and Neb.

Minn. valley: Forest district; ponds and lakes.

HERB.: *Ballard 642 n.*, Page Lake, Carver Co.; *Ballard 456*, Prior's Lake, Scott Co.; *Ballard 598*, Prior's Lake, Scott Co.; *Holzinger 267*, Winona Co.; *Bailey 545*, Long Lake; *Bailey 403*, Burntside Lake; *W. Upham in herb. Morong*, Mankato.

Potamogeton foliosus RAF. Med. Rep. (III), II, 409 (1811).
P. pauciflorus PURSH, Fl Am. (1814) not Lam.
P. purshianus MORONG in Litt. (1892).

Wats. and Coult., Gray's Man. 6 ed. 563; Britt., Fl. N. J. 258; Upham, Fl. Minn. 137; Webb., Fl. Neb. 97; Wats., Fl. Calif. II. 197; Mac., Fl. Can. II. 86; Chap., Fl. So. St. 446.

North America: N. Br., Q., Ont. to N. Superior region, Saskatchewan and Hudson Bay; Oregon to central Calif.; N. Eng. to N. J. and Ga.; W. to Iowa, Minn., Neb. and Kan.

Minn. valley: Forest district; ponds and lakes.

HERB.: *Upham*, Mankato, in *herb Morong.*

ZANICHELLIA LINN. Gen. 700 (1737).

Benth. and Hook., *Gen. Pl.* III. 1016; Durand, *Ind. Gen. Phan.* 453; Engler and Prantl, *Nat. Pflanz.* 2, I, 213 (Ascherson).

Living species: 9 described; only 1 distinct. Cosmopolitan, but wanting in Australia.

Zanichellia palustris LINN. Spec. 969 (1753).
Z. geniculata GILIB. Exerc. Phyt. II. 419 (1792).
Z. repens BNGH. Fl. Mon. Prodr. 273 (1824).
Z. major BNGH. Reich. Icon. VIII. 24 (1830).
Z. radicans WALLM. Flora, Lit. Bl. 20 (1841).
Z. macrostemon GAY, WILLK. and LGE. Prodr. I, 26 (1870).

Wats. and Coult., Gray's Man. 6 ed. 565; Britt., Fl. N. J. 259; Mac, Fl. Can. II. 90; Webb., Fl. Neb. 96; Wats., Fl. Calif. II. 193; Coult., Fl. Colo. 362; Upham, Fl. Minn. 136; Chap., Fl. So. St. 445; Hook., Fl. Gt. Brit. 437; Nym., Fl. Eur.; Richt., Pl. Eur. 17; Herd., Fl. Eur. Russ, 124; Engl., Ascherson, Nat. Pflanz. II, 1, 213; Wats., King Exp. 337; Led., Fl. Ross, IV. 22.

Europe; Asia; North Africa; Philippines; Australia.

North America: Anticosti, N. S., Q., Ont., N. E. T., Saskatchewan and Man.; S. to N J. and Fla.; W. to Oregon, Utah, Calif. and N. Mex.

Minn. valley: Reported from S. central region; peat bogs; rare.

Herb.: *?Sandberg 530*, Goodhue Co.

IV. NAJADACEAE. Naiad Family.

Najadeae (Tribus VII, Najadaceae) Benth. and Hook., *Gen. Pl.* III. 1011 (1883); Magnus *in Eng. and Prantl, Nat. Pflanz.* 2, I. 214 (1889)

Genera: 1; temperate and tropical regions.

Species: 10–12 living; 1–2 extinct.

NAJAS Linn. Gen. 701 (1737).

Fluvialis Michel. *Nov. Gen.* t. 8 1729), and Pers. *Syn.* II. 530 (1807).
Caulinia Willd. *Mem. Acad. Berl.* 87 (1798).
Ittnera Gmel. *Fl. Bad.* III, t. 4 (1808).

Benth. and Hook., *Gen. Pl.* III, 1018; Durand, *Ind. Gen. Phan.* 453; Engler and Prantl, *Nat. Pflanz.* 2, I, 217 (Magnus); Schenck, *Palaeophyt.*, 380.

Living species: 10–12; temperate and tropical regions: Europe, 4; Russian Europe, 3; N. America, 4; E. Sts., 3; California, 2; Canada, 1; So. Sts., 3; Pl. Wheel., 1.

Fossil species: Upper cretaceous and tertiary.

Najas flexilis (Willd.) Rostk. and Schm., Fl. Sed. 382(1824).

Caulinia flexilis Willd. *Act. Acad. Berol.* 88 (1798).
Fluvialis flexilis Pers. *Syn.* II, 530 (1807).
Najas graminea Rostk. *in Link. H. C.* I, 287 (1829).

Wats. and Coult., Gray's Man. 6 ed. 566; Britt., Fl. N. J. 259; Mac., Fl. Can. II. 91; Upham, Fl. Minn. 136; Chap., Fl. So. St. 444; Wats., Fl. Calif. II, 191; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 439; Richt., Pl. Eur. 18; Herd. Fl. Eur. Russ. 126; Engl. Magnus, Nat. Pflanz. II. 1, 217; Hart., Fl. Scand. I, 404; Webb., Appx. Neb. 22.

Great Britain, Scandinavia, N. Germany, Russia, Siberia; Mexico; W. Indies.

North America: N. S., N. Br., Q., Ont. to Man., Brit. Col. and Pac.; S. to N. Eng., N. J. and S. Car.; W. to Minn., Iowa and Neb.; S. to San Francisco on Pac. coast.

Minn. valley: Throughout; infrequent or locally abundant; lakes, ponds and sluggish streams.

Herb.: *Taylor 450*, Lake Helena, Waseca Co.; *Sheldon 910*, Cottonwood river, near Sleepy Eye; *Holzinger 264*, Winona Lake; *Oestlund 183*, Minnehaha; *Bailey 389*, Mud Lake.

V. JUNCAGINEAE. Arrow-Grass Family.

Endlicher, *Gen. Pl.* 127 (1840); Benth. and Hook., *Gen. Pl.* III. 1010 (1883), *Tribus I, Najadaceae;* Buchenau and Hieronymus *in Engl. and Prantl, Nat. Pflanz.* 2, I, 222 (1889).

Genera: 4 living; 2 extinct; temperate regions to Magellan straits and Australia.

Species: 15 living; 2 extinct.

TRIGLOCHIN LINN. Gen. 302 (1737).

Juncago TOURN. *Inst.* (1700).
Cycnogeton ENDL. *Ann. Wien. Mus.* II, 210 (1840).
Maundia F. MULL. *Frag. Phyt. Austral.* I. 23 (1861?).

Benth. and Hook. *Gen. Pl.* III, 1012; Durand, *Ind. Gen. Phan.* 452; Engler and Prantl, *Nat. Pflanz.* 2, I, 224 (Buchenau and Hieronymus).

Living species: 12; temperate and colder regions. Russia, 4; Europe, 5; Russian Europe, 2; N. America, 2; Canada, 2; E. Sts., 2; So. Sts., 1; Rocky Mts., 2; Pl. King, 2; California, 1; Pl. Wheel., 2.

Triglochin palustris LINN. Spec. 338 (1753).

T. juncea GILIB. *Exerc. Phyt.* II, 501 (1792).
Juncago palustris MOENCH, *Meth.* 644 (1794).
Triglochin chilensis MEYEN, *Reise* I, 354 (1835).

Wats. and Coult., Gray's Man. 6 ed. 557; Upham, Fl. Minn. 138; Mac., Fl. Can. II. 79; Wats., Fl. Calif. II, 199; Coult., Fl. Colo. 364: Trautv., Fl. Sib. 113; Nym., Fl. Eur.; Led., Fl. Ross. IV. 35; Hook., Fl. Gt. Brit. 430; Richt., Pl. Eur. 18; Herd., Fl. Eur. Russ. 124; Engl. Buchanau, Nat. Pflanz. II. 1, 224; Wats., King Exp. 340; Roth , Wheel. Exp. 268; Hart., Fl. Scand. I, 417; Rothr., Alask. 446.

Europe; Asia; Africa; S. America.

North America: Labrador, N. Br., Q., Ont. to Man., Little Slave Lake, Bartlett Bay and Alaska; W. to Rocky Mts.; S. to N. Y., Ill., Minn., Dak. and Mont.; in Rockies to N. Mex. and Mexico.

Minn. valley: S. central district and probably sparingly throughout; peat bogs.

HERB.: *Leiberg 63, 64,* Blue Earth Co.

Triglochin maritima LINN. Spec. 339 (1753).

T. mexicana H. B. K. N. Gen. et Spec. I, 244 (1815).
T. elata NUTT. Gen. I, 237 (1818).
T. salina WALLR. Linn. XIV, 567 (1840).
T. maritima var. *elata* GRAY, Man. ed. V, 491 (1867).

Wats. and Coult , Gray's Man. 6 ed. 558; Britt., Fl. N. J. 256; Coult., Fl. Colo. 364; Webb., Fl Neb. 97; Upham, Fl. Minn. 138; Mac., Fl. Can. II, 80; Wats., Fl. Calif. II, 199; Hook., Fl. Gt. Brit. 430; Nym., Fl. Eur.; Led., Fl. Ross. IV, 35; Trautv., Fl. Sib. 113; Richt., Pl. Eur. 19; Herd., Fl. Eur. Russ. 124; Engl., Buchenau Nat. Pflanz. II, 1, 224; Wats., King Exp. 340; Roth., Wheel. Exp. 268; Hart., Fl. Scand. I, 417; Rothr., Alask. 446.

Europe; Asia; Africa; S. to Caucasus and Dahuria.

North America: Atlantic coast from Labrador to N. J.; also San Francisco to Arctic ocean and Alaska; interior from mts. of Colo. to N. Mex. and E. to the coast in saline places.

Minn. valley: Throughout; S. central district, abundant; marshes and peat bogs.

HERB.: *Taylor 732*, Glenwood; *Ballard 809*, Page Lake, Carver Co.; *Ballard 359*, Helena, Scott Co.; *Ballard 624*, Chaska; *Leiberg 65*, Blue Earth Co.; *Herrick 286*, Minneapolis; the rest are var. *elatum* (Nutt.). *Herrick 287*, Minneapolis; *Bailey 326*, St. Louis river; *Sandberg 533*, Chisago Lake.

SCHEUCHZERIA LINN. Gen. 301 (1737).

Benth. and Hook., *Gen. Pl.* III, 1012; Durand, *Ind. Gen. Phan.* 453; Engler and Prantl, *Nat. Pflanz.* 2, I, 225 (Buchenau and Hieronymus); Schenck, *Palaeophyt.* 388.

Living species: 1; N. temperate and boreal regions.

Fossil species: Cretaceous; *Lamprocarpites*, Greenland (*Heer*).

Scheuchzeria palustris LINN. Spec. 338 (1753).

S. paniculata GILIB. Exerc. Phyt. II, 502 (1792).
S. asiatica MIQ. Fl. Ind. Bat. III, 243 (1837?).

Wats. and Coult., Gray's Man. 6 ed. 558; Britt., Fl. N. J. 256; Coult., Fl. Colo. 364; Upham, Fl. Minn. 138; Mac., Fl. Can. II, 81; Wats., Fl. Calif. II, 199; Led., Fl. Ross. IV. 37; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 430; Richt., Pl. Eur. 19; Herd., Fl. Eur. Russ. 124; Engl. Buchenau, Nat. Pflanz. II. 1, 225; Hart., Fl. Scand. I, 416.

Middle and N. Europe; N. Asia.

North America: N. Br. Ont. to Hudson Bay, Georgian Bay, Keewatin and Rocky Mts.; S. to N. J. and W. to Minn., Dak., Mont. and Colo.; also Washington to Sierra Co., Calif.

Minn. valley: Throughout, but local or rare; peat bogs and wet places in marshy meadows.

HERB.: *Taylor 1113*, Glenwood; *Bailey 305*, St. Louis river; *Sandberg 534*, Chisago Co.

VI. ALISMACEAE. Water-Plantain Family.

Endlicher, *Gen. Pl.* 127 (1840) in part; Benth. and Hook. *Gen. Pl.* III. 1003 (1883), excl. *Tribus II, Butomeae;* Buchenau, *Engl. and Prantl, Nat. Pflanz.* 2, I, 227 (1889).

Genera: 10; temperate and warmer regions.

Species: 55± living; 4-5 extinct.

ALISMA Linn. Gen. 308 (1737).

Caldesia Parlat. *Fl. It.* III, 598 (1862?).
Baldellia Parlat. *Nuovo. Gen. Monoc.* 57 (1854).
Helanthium Engelm. Mss. *ex. Benth. and Hook. l. c.* (1883).

Benth. and Hook. *Gen. Pl.* III, 1004; Durand, *Ind. Gen. Phan.* 452; Engler and Prantl, *Nat. Pflanz.* 2, I, 230 (Buchenau); Schenck, *Paleophyt.*, 388.

Living species: 5–10; Europe; temperate and tropical Asia; tropical Africa; Australia; N. and S. America. Russia, 4; Europe, 5; U. S., 2; 1, continental; 1, Pac. coast.

Fossil species: 3–4; Cretaceous, Greenland (*Heer*); Tertiary, Greenland and Spitzbergen (*Heer*); France (*Saporta*). All doubtful.

Alisma plantago Linn. Spec. 342 (1753).

A. natans Poll. Pl. Pal. III, 319 (1777).
A. latifolium Gilib. Fl. Lith. V, 222 (1781).
A. ranunculoides All. Fl. Ped. I, 234 (1785).
A. angustifolium Hoppe, Taschenb. 13 (1797).
A. plantago var. *americanum* R and S. Syst. III (1818).
A. trivialis and *parviflora* Pursh, Fl. Am. 252 (1814).
?*A. subcordatum* Raf. Med. Rep V, 356 (1809).
?*A. odorata* Raf. Fl. Lud. (1817).
?*A. roseum* Raf. Ex. Steud. Nom.
A. lanceolatum Schultze, Spreng Syst. II, 163 (1825).
A. plantago var. *triviale* B. S. P. Cat. N. Y. (1888).

Wats. and Coult., Gray's Man. 6 ed. 554; Britt. Fl. N. J. 255; Coult. Fl. Colo. 361; Webb., Fl. Neb. 97; Mac., Fl. Can. II, 76; Wats., Fl. Calif. II, 200; Chap., Fl. So. St. 448; Hook., Fl. Gt. Brit. 427; Nym., Fl. Eur.; Led. Fl. Ross. IV, 39; Trautv., Fl. Sib. 113; Richt., Pl. Eur. 19; Herd. Fl. Eur. Russ. 124; Engl. Buchenau, Nat. Pflanz. II, 1, 230; Wats., King Exp. 340; Cov., Fl. Ark. 228; Hart., Fl. Scand. I, 415.

Europe; Asia, Australia; N. Africa.

North America: Newf. to Rockies and Pac.; S. to N. California and E. to N. Eng. and N. Ga.

Minn. valley: Throughout; abundant; marshes and edges of lakes or shallow edges of slow streams.

Herb.: *Taylor 220*, Janesville; *Ballard 821*, Page Lake; *Ballard 264*, Jordan; *Taylor 730*, Glenwood; *Ballard 789*, Swan Lake; *Ballard 609*, Chaska; *Sheldon 922*, Sleepy Eye; *Taylor 609*, Minnesota Lake; *Kassube 225*, Minneapolis; *Oestlund 187*, Hennepin Co.; *Holzinger 269*, Winona Co.; *Sandberg 535*, Goodhue Co.; *MacM. and Sheld. 51*, Brainerd; *Herb. Moyer 229*, Montevideo.

SAGITTARIA Linn. Gen. 723 (1737).

Lophiocarpus Mich. *D. C. Mon. Phan.* III, 60 (1881).

Benth. and Hook., *Gen. Pl.* III, 1006; Durand, *Ind. Gen. Phan.* 452; Engler and Prantl, *Nat. Pflanz.* 2, I, 231 (Buchenau); Schenck, *Palaeophyt.* 389.

Living species: 14–17; mostly American, but in all temperate and tropical regions. U. S., 10–12; E. Sts., 7; So. Sts., 5; Canada, 4; California, 1; Atl. America and Tex., 10.

Fossil species: 3–4; Tertiary; Alaska, Greenland, Spitzbergen (*Heer*); doubtful.

Sagittaria rigida PURSH, Fl. Am. 397 (1814).

S. heterophylla PURSH, Fl. Am. 396 (1814) not Schreb.

Wats. and Coult., Gray's Man. 6 ed. 555; Britt., Fl. N. J. 256; Upham, Fl. Minn. 138; Chap., Fl. S. St. 449; Mac., Fl. Can. II, 78.

North America: St. Lawrence to N. Eng., N. J. and Fla.; W. to Minn. and Mo.

Minn. valley: Throughout; edges of lakes or quiet streams; abundant.

HERB.: *Sheldon 321*, Madison Lake, Blue Earth Co.; *Ballard 814*, Page Lake, Carver Co.; *Sheldon 705*, White Bear Lake; *Ballard 588*, Crystal Lake, Scott Co.; *Taylor 444*, Lake Helena, Waseca Co.; *Bailey 542*, Long Lake; *Herrick 289*, Minnetonka; *Sandberg 538*, Centre City; *Herb. Wickersheim 117*, Ash Lake, Lincoln Co.

Sagittaria graminea MICHX. Fl. N. Am. I, 190 (1803).

S. acutifolia PURSH, Fl. Am. 397 (1814).
S. purshii KUNTH, Enum. III, 160 (1838).
S. stolonifera ENGELM. and GRAY, Pl. Lindh. 26 (1845).
S. simplex. AUCT. AMER.

Wats. and Coult., Gray's Man. 6 ed. 555; Britt., Fl. N. J. 256; Mac., Fl. Can. II. 79; Webb., Fl. Neb. 97; Chap., Fl. So. St. 449; Cov., Fl. Ark. 228.

North America: Cape Breton, N. Br., Ont. to N. Eng., N. J., Fla.; W. to Minn., Neb., Ark. and La.

Minn. valley: Forest district; local or infrequent; edges of ponds and quiet streams.

HERB.: *Ballard 603*, Prior's Lake, Scott Co.; *Ballard 237*, Jordan, Scott Co.; *Berseth 1*, Minneapolis.

Sagittaria sagittaefolia LINN. Spec. 993 (1753).

S. minor MILL. Dict. (1768).
S. major SCOP. Fl. Carn. II, 239 (1772).
S. monoica GILIB. Fl. Lith. V, 218 (1781).
S. vulgaris GULDENST. Reise Russ. II, 45 (1791).
S. latifolia and *obtusa* WILLD. Spec. IV, 409 (1805).
Vallisneria bulbosa POIR. Enc. Meth. VIII, 321 (1806).
Sagittaria heterophylla SCHREB. Fl. Erl. II, 119 (1811).
S. gracilis, *hastata* and *simplex* PURSH, Fl. Am. II, 396 (1814).
S. variabilis ENGELM. Gray's Man. ed. 1 (1848).
S. longiloba ENGELM. Torr. Mex. Bound. (1858).
S. sagittaefolia var. *variabilis* MICHELI, D. C. Mon. Phan. III, 69 (1881).

Wats. and Coult., Gray's Man. 6 ed. 554; Upham, Fl. Minn. 138; Mac., Fl. Can. II, 77; Wats., Fl. Calif. II. 201; Webb., Fl. Neb. 97; Coult., Fl. Colo. 361; Chap., Fl. So. St. 449; Britt., Fl. N. J. 255; Hook., Fl. Gt. Brit. 428; Nym., Fl. Eur.; Richt., Pl. Eur. 20; Herd., Fl. Eur. Russ. 124; Engl. Buchenau, Nat. Pflanz. II. 1, 231; Mac., Fl. Can. II, 368; Wats., King Exp. 340; Cov., Fl. Ark. 228; Hart., Fl. Scand. I. 416.

Europe; Asia to N. W. India.

North America: Atl. to Pac. in Can.; N. to 60° N. lat.; S. to Calif. and N. Nev.; from Rockies E. to N. Eng., N. J. and Fla.

Minn. valley: Throughout in the various forms; marshes, edges of ponds and quiet streams; abundant.

HERB.: *Forma gracilis* (Pursh), *Ballard 897*, St. Bonifacius; *Ballard 831*, Page Lake; *F. obtusa* (Willd.), *Ballard 607*, Prior's Lake; *Ballard 731*, Benton; *F. hastata* (Pursh), *Taylor 642*, Minnesota Lake; *Taylor 405*, Buffalo Lake, Waseca Co.; *Taylor 22*, Elysian; *Sheldon 1567*, Lake Benton; *Ballard 666*, Waconia; *Ballard 163*, Chaska; *F. latifolia* (Willd.), *Sheldon 921*, Sleepy Eye; *F. angustifolia* (Engelm.), *Sheldon 1073*, Springfield; *Ballard 739*, Waconia; *Ballard 808*, Page Lake, Carver Co.; *Ballard 830*, Page Lake; *F. diversifolia*, *Herrick 288*, Minneapolis; *also F. angustifolia*, *Bailey 151*, Vermilion Lake; *Sandberg 536*, Red Wing; *F. latifolia*, *Sandberg 537*, Vasa; *Oestlund 188*, Minnehaha; *F. hastata*, *Bailey 154*, Vermilion Lake; *Herb. Sheld. 1683*, *forma angustifolia* (Engelm.), Minneapolis; *Herb. Moyer 230*, *forma obtusa* (Willd.), Montevideo.

VII. HYDROCHARITACEAE. Frog's-Bit Family.

Endlicher, *Gen. Pl.* 160 (1840); Benth. and Hook. *Gen. Pl.* III, 448 (1883); Ascherson and Gürke, *Engl. and Prantl, Nat. Pflanz.* 2, I, 238 (1889).

Genera: 14; cosmopolitan; 11 in fresh water; 3 in Indian ocean, African coast waters, Red sea, Australian waters and the Pacific.

Species: 60 living; 1–2 extinct?.

ELODEA L. C. RICH. Mx. Fl. Bor.-Am. I, 20 (1803).

Udora NUTT. *Gen.* II, 242 (1818).

Apalanthe and **Egeria** PLANCH. *Ann. Nat. Sci.* 3, XI, 75, 79 (1849).

Anacharis BAB. and PLANCH. *Trans. Bot. Soc. Edin.* III, 27 (1852).

Benth. and Hook., *Gen. Pl.* III, 450; Durand, *Ind. Gen. Phan.* 383; Engler and Prantl, *Nat. Pflanz.* 2, I, 250 (Ascherson and Gürke).

Living species: 6; N. and S. America; Mid. and N. Europe (introduced); U. S., 1.

Elodea canadensis Rich. and Michx. Fl. N. Am. I, 20 (1803).

Serpicula occidentalis Pursh, Fl. Am. 38 (1814).

Udora canadensis Nutt. Gen. II, 242 (1818).

Serpicula verticillata Muhl. Cat. (1818).

Apalanthe schweinitzii Planch. Ann. Sci. Nat. 3, XI, 75 (1839).

Anacharis canadensis Planch. Ann. Mag. and Nat. Hist. 2 ser. I, 86 (1848).

Udora occidentalis Koch, Syn. 771 (1843–45).

Anacharis alsinastrum Bab. Ann. Nat. Hist. 81 (1848).

Wats. and Coult., Gray's Man. 6 ed. 496; Britt., Fl. N. J. 229; Upham, Fl. Minn. 139; Wats., Fl. Calif. II, 129; Chap., Fl. So. St. 450; Mac., Fl. Can. II, 1; Hook., Fl. Gt. Brit. 382; Richt., Pl. Eur. 21; Herd., Fl. Eur. Russ. 124; Engl., Ascherson, Nat. Pflanz. II, 1, 251; Cov., Fl. Ark. 221; Hart., Fl. Scand. I, 403; Webb., Appx. Neb. 22.

Introduced in Gt. Britain, C. Eur. and Russia.

North America: Q., Ont. to Saskatchewan and Assiniboia; S. to Oregon and Mendocino Co., Calif.; S. to N. Eng., N. J. and N. Car.; W. to Minn., Neb., Ark. and Mo.

Minn. valley: Forest district; abundant; rivers, streams and lakes.

Herb.: *Ballard 605*, Prior's Lake, Scott Co.; *Ballard 822*, Page Lake, Carver Co.; *Ballard 823a*, Jordan, Scott Co.; *Taylor 317*, Janesville; *Oestlund 189*, Minnehaha; *Holzinger 270*, Winona Co.; *Holzinger 271*, Winona Lake.

VALLISNERIA Linn. Gen. 741 (1737) Em. Mich.

Physkium Lour. *Fl. Cochinch.* 662 (1790).

Nechamandra Planch. *Ann. Sci. Nat.* 3, XI, 78 (1849).

?Lagarosiphon Harv. *Hook. Journ. Bot* IV, 230 (1842) part.

Benth. and Hook., *Gen. Pl.* III, 450, 451; Durand, *Ind. Gen. Phan.* 383; Engler and Prantl, *Nat. Pflanz.* 2, I, 251 (Ascherson and Gürke); Schenck, *Palaeophyt.* 390.

Living species: 2; tropical and subtropical regions, extending into temperate N. and S. America. 1 sp. tropical Asia and Isl. of Socotra (African region); 1 sp. circumdiffused.

Fossil species: Eocene, Aix (*Saporta*) 1 sp.; Jurassic of Siberia, 1 sp.? (*Schenck*)

Vallisneria spiralis Linn. Spec. 1015 (1753).

Physkium natans Lour. Cochinch. 662 (1790).

Vallisneria americana Michx. Fl. N. Am. II, 220 (1803).

V. jacquinii Savi. Oss. 12 (1816).

V. spiralis var. *americana* Torr. Comp. 365 (1824).

V. jacquiniana Eichw. Fl. Casp. Cauc. 2 (1831).

Wats. and Coult., Gray's Man. 6 ed. 496; Britt., Fl. N. J. 229; Mac., Fl. Can. II, 1; Chap., Fl. So. St. 450; Upham, Fl. Minn. 139; Nym., Fl. Eur.; Led., Fl. Ross. IV, 46; Richt., Pl. Eur. 21; Herd., Fl. Eur. Russ. 124; Engl., Ascherson and Gürke, Nat. Pflanz. II, 1, 252; Cov., Fl. Ark. 221.

S. Europe, Mid. and S. Russia; India; Australia; Islands of Mediterranean.

North America: N. Br., Q., Ont. to Man.; S. to N. Eng., N. J., Fla.; W. to Minn. and Tex.

Minn. valley: Forest district and W. to Cottonwood valley and Chippewa; rivers, ponds and lakes.

HERB.: *Ballard 455,* Prior's Lake, Scott Co.; *Herrick 290,* Minnetonka; *Oestlund 190,* Minnehaha; *Holzinger 272,* Winona Co.; *Sandberg 539, 540,* "Minnesota."

VIII. GRAMINEAE. Grass Family.

Endlicher, *Gen. Pl.* 77 (1840); Benth. and Hook., *Gen. Pl.* III, 1074 1883); Hackel *in Engl. and Prantl, Nat. Pflanz.* 2, II, 1 (1887).

Genera: 300–325; cosmopolitan; 3–4 extinct.

Species: 3500–4000; 3100-3200 (B. and H.); 40–50 extinct?

ANDROPOGON LINN. Gen. ed. V, 1014 (1754).

Schizachrium NEES, Agrost. Bras. 331 (1829).
Heterochloa DESVX. ex Dur. l. c. (1888).
Diectomis H. B. K Nov. Gen. et Spec. I, 193 (1815).
Homoeatherum NEES, Hook. and Arn. Beech. Bot. 239 (1841).
Hypogynium NEES, Agrost. Bras. 364 (1829).
Anadelphia HACK. Engl. Jahrb. VI, 240 (1885).
Arthostachys DESVX. ex Dur. l. c. (1888).
Euklastaxon STEUD. Syn. Glum. I, 412 (1855).
? **Agenium** NEES, Lindl. Introd Nat. Syst. ed. 2, 447 (1835).
Sorghum PERS. Syn. I, 101 (1805).
Blumenbachia KOEL. Gram. Gall. 28 (1802).
Vetiveria THOU. ex Vir. Journ. Pharm. I, XIII, 499 (1857).
Anatherum P. BEAUV. Agrostogr. 128 (1812).
Mandelorna STEUD. Syn. Glum. I, 359 (1855).
Chrysopogon TRIN. Fund. Agr. 187 (1820).
Rhaphis LOUR. Cochinch. 552 (1790).
Centrophorum TRIN. Fund. Agr. (1820).
Holcus R. BR. Prodr. 198 (1810) in part.
Dichantium WILLEM. Herb. Maur. in Ust. Ann. Bot. XVIII, 11 (1796).
Diplasanthus DESVX. ex Dur. l. c. (1888).
Lepeocercis TRIN. Fund. Agr. 203 (1820).
Cymbopogon SPRENG. Pl. Min. Cog. Pugil. II, 14 (1815).
Gymnanthelia and **Hyparrhenia** ANDERS. Schweinf. Beitr. Fl. Aethiop. 299, 300 (1862?).
Heteropogon PERS. Syn. II, 533 (1805).

Benth. and Hook., *Gen. Pl.* III, 1133–1135; Durand, *Ind. Gen. Phan.* 464; Engler and Prantl, *Nat. Pflanz.* 2, II, 26 (Hackel).

Living species: 200 ±; warmer regions; N. America, Asia and temperate Europe. Europe, 8–9; N. America, 24;

So. Sts., 20; Canada, 3–4; E. Sts., 10; Rocky Mts., 5; Pl. Wheel., 6.

Andropogon nutans LINN. Spec. 1045 (1753).
A. avenaceus MICHX. Fl. N. Am. I, 58 (1803).
Sorghum nutans GRAY. Man. ed. I, 617 (1848).
Chrysopogon nutans B. and H. Gen. Pl. III, 1135 (1883).

Wats. and Coult., Gray's Man. 6 ed. 638; Mac., Fl. Can. II, 185; Webb., Fl. Neb. 105; Coult., Fl. Colo. 406; Chap., Fl. So. St. 583; Vas., Ag. Grasses U. S. 36; Upham, Fl. Minn. 173; Roth., Wheel. Exp. 296; Cov., Fl. Ark. 234; Vas., Mon. 9.

North America: Ont. to Man.; S. to N. Y., N. J. and Fla.; W. to Minn., Neb., Kan., Mo., Ark. and S. Colo.

Minn. valley: Throughout; principally prairie district; dry and high places.

HERB.: *Sheldon 1595,* Lake Benton; *Taylor 1064,* Alexandria; *Sheldon, 1289,* Lake Benton; *Sheldon 1652,* Minneapolis; *MacM. and Sheld. 17,* Brainerd; *Sandberg 606,* Red Wing; *Foote 12,* Worthington.

Andropogon provincialis LAM. Enc. Meth. I, 376 (1783).
A. villosus var. *B.* LAM. Fl. Fr. III, 634 (1778).
A. gerardi VITM. Summ. Pl. VI, 16 (1792).
A. furcatus MUHL. Willd. Spec. IV, 919 (1805).

Wats. and Coult., Gray's Man. 6 ed. 637; Mac., Fl. Can. II, 184; Britt., Fl. N. J. 284; Webb., Fl. Neb. 105; Coult., Fl. Colo. 405; Upham, Fl. Minn. 173; Chap., Fl. So. St. 581; Vas., Ag. Grasses U. S. 35; Richt., Pl. Eur. I, 23; Cov., Fl. Ark. 234; Vas., Mon. 12.

Southern France.

North America: Ont.; L. of Woods, Man.; S. to N. J. and Fla.; W. to Minn., Dak., Neb., Colo., Ark. and Tex.

Minn. valley: Throughout; especially in prairie district; dry and high places.

HERB.: *Taylor 1028,* Glenwood; *Sheldon 1172,* New Ulm; *Taylor 1071,* Alexandria; *Sheldon 1130,* Springfield; *Sheldon 1338,* Lake Benton; *Sandberg 603,* Goodhue Co.; *Sandberg 604,* Red Wing; *Foote 10,* Worthington; *Oestlund 349,* Minneapolis; *350,* Minneapolis.

Andropogon scoparius MICHX. Fl. N. Am. I, 57 (1803).
A. dissitiflorus MICHX. Fl. N. Am. I, 57 (1803).
A. purpurascens WILLD. Spec. IV, 913 (1805).
Pallinia scoparia SPRENG. Syst. II, 832 (1825).

Wats. and Coult., Gray's Man. 6 ed. 637; Britt., Fl. N. J. 284; Mac., Fl. Can. II, 185; Webb., Fl. Neb. 105; Upham, Fl. Minn. 173; Coult., Fl. Colo. 405; Chap., Fl. So. St. 581; Vas., Ag. Grasses U. S. 35; Roth., Wheel. Exp. 296; Cov., Fl. Ark. 234; Vas., Mon. 10.

North America: N. Br., Q., Ont. to Man. and Saskatchewan; S. to N. Eng.. N. J. and Fla.; W. to Minn., Dak., Neb., Kan., Mo., Ark. and S. Colo.

Minn. valley: Throughout; principally in prairie district; high or dry places.

HERB.: *Sheldon 1318*, Lake Benton; *Sheldon 1378*, Verdi, Lincoln Co.; *MacM. and Sheld. 13*, Brainerd; *Sandberg 605*, Red Wing; *Foote 11*, Worthington.

PANICUM LINN. Gen. 47 (1737).

Thalasium SPRENG. Syst. Cur. Post. 22, 30 (1827).
Digitaria RICH. in Pers. Syn. I, 84 (1805).
Syntherisma WALT. Fl. Carol. 76 (1788).
Trichachne NEES, Agrost. Bras. 85 (1829).
Acicarpa RADDI, Agrost. Bras. 31 (1823).
Urochloa KUNTH, Rev. Gram. I, 31 (1835).
Coridochloa NEES, Edin. Phil. Journ. XV, 381 (1831?).
Eriachne PHILIPPI, Sert. Mend. Alt. 49 (1860?).
Holosetum, Mesosetum STEUD. Syn. Glum. I, 118 (1855).
Bluffia, Rhynchelythrum NEES, Fl. Afr. Austr. Gram. 61, 64 (1841).
Thrasya H. B. K. Nov. Gen. et Spec. I, 120 (1815).
Tylothrasya DOELL. Mart. Fl. Bras. II, 2, 295 (1833).
? **Dimorphostachys** FOURN. Compt. Rend. LXXX, 441 (1875).
Paractaenium, Urochloa, Echinochloa, Hymenachne BEAUV. Agrostogr. 47, 48, 53 (1812).
Streptostachys DESVX. Bull. Philom. II, 190 (1810).
Otachyrium NEES, Agrost. Bras. 273 (1829).
Coleataenia GRISEB. Symb. Arg. 308 (1875).
Tricholaena SCHRAD. R. and S. Syst. II, Mant. 163 (1824).
? **Gramerium** DESVX. ex Dur. l. c. (1888).
? **Alloteropsis** PRESL, ex Dur. l. c. (1888).

Benth. and Hook., *Gen. Pl.* III, 1100; Durand, *Ind. Gen. Phan.* 466; Engler and Prantl, *Nat. Pflanz.* 2, II, 35, 36 (Hackel); Schenck, *Palaeophyt.* 384.

Living species: 310 ±; temperate and warmer regions; Europe, 13; Russia, 10–12; N. America, 67; So. Sts., 48; E. Sts., 22; California, 15; Rocky Mts., 5; Canada, 15; Texas, 41; Pl. Wheel., 5; Pl. King, 3.

Fossil species: ? Tertiary of Switzerland (*Schenck*).

Panicum crus-galli LINN. var. **hispidum** (MUHL.) TORR. Fl. N. Y. II, 424 (1843).

P. muriatum MICHX. Fl. N. Am. I, 47 (1803).
P. walteri PURSH, Fl. Am. 66 (1814).
P. hispidum MUHL. Gram. 107 (1817).
Oplismenus muricatus KUNTH, Enum. I, 143 (1833).

Wats. and Coult., Gray's Man., 6 ed. 634; Britt., Fl. N. J. 282; Mac., Fl. Can. II, 177; Webb., Fl. Neb. 106; Upham, Fl. Minn. 173; Roth., Wheel. Exp. 295; Wats., King Exp. 394; Cov., Fl. Ark. 232; Vas., Mon. 37.

North America: Ont., N. Y. and N. J. to Minn., Neb. and Ark.

Minn. valley: Reported from S. E. and S. W. edges; doubtfully indigenous; boggy places or drier soil.

HERB.: *Sandberg 600*, Red Wing.

Panicum dichotomum LINN. Spec. 58 (1753).

P. pubescens, nitidum and *laxiflorum* LAM. Enc. Meth. IV, 749 (1797).
P. barbulatum and *ramulosum* MICHX. Fl. N. Am. I, 46 (1803).
? *P. microcarpon* MUHL. Gram. 112 (1817).

Wats. and Coult., Gray's Man., 6 ed. 633; Britt., Fl. N. J. 280; Chap., Fl. So. St. 576; Mac., Fl. Can. II, 178; Webb., Fl. Neb. 106; Coult., Fl. Colo. 404; Wats., Fl. Calif. II, 259; Upham, Fl. Minn. 172; Wats., King Exp. 394; Cov., Fl. Ark. 232; Vas., Mon. 30.

North America: Newf., N. S., Q., Ont. to Owen Sound, Ste. Marie and Thunder Bay; S. to N. Y., N. J., Fla.; W. to Minn., Neb., Ark., Colo., Calif. and S. to N. Mex.

Minn. valley: Forest district and probably W.; dry fields and along embankments.

HERB.: *Ballard 8*, Chaska; *Sheldon 1100*, Springfield; *Ballard 278*, Jordan, Scott Co.; *Ballard 520*, Prior's Lake, Scott Co.; *Ballard 315*, Belle Plaine; *Ballard 544*, Spring Lake, Scott Co.; *Ballard 637*, Chaska; *Sheldon 1216*, New Ulm; *Sheldon 515*, Waseca [*var. pubescens* (*Lam.*)]; *Oestlund 346*, Minneapolis; *Oestlund 347*, Minneapolis [*var. pubescens* (*Lam.*)]; *Herb. Sheld. 1709, 1798*, Minneapolis.

Panicum depauperatum MUHL. Gram. 112 (1817).

? *P. strictum* PURSH, Fl. Am. 69 (1814).
P. rectum R. and S. Syst. II, 457 (1817).
P. involutum TORR. Fl. U. S. I, 144 (1824).

Wats. and Coult., Gray's Man., 6 ed. 633; Britt., Fl. N. J. 279; Mac., Fl. Can. II, 177; Webb., Fl. Neb. 106; Upham, Fl. Minn. 173; Chap., Fl. So. St. 576; Cov., Fl. Ark. 232; Vas., Mon. 29.

North America: Newf., N. S., Q., Ont. to Saskatchewan; S. to N. Eng., N. Y., N. J., N. Car.; W. to Minn., Neb. and Ark.

Minn. valley: Forest district; dry woods; hillsides, along embankments and shores of lakes.

HERB.: *Leiberg 104*, Blue Earth Co.; ? *Sandberg 599*, Cannon Falls; *Herb. Sheld. 1797*, Minneapolis.

Panicum scoparium LAM. Enc. Meth. IV (1797).

P. pauciflorum ELL. Sk. I. (1821).

Wats. and Coult., Gray's Man., 6 ed. 632; Britt., Fl. N. J. 280; Webb., Fl. Neb. 106; Mac., Fl. Can. II, 180; Coult., Fl. Colo. 404; Wats., Fl. Calif. 259; Upham, Fl. Minn. 172; Chap., Fl. So. St. 575; Cov., Fl. Ark. 233; Vas., Mon. 31.

North America: Ont., N. Y., N. J. to N. Car. and Fla.; W. to Vancouver; S. to Calif., Oregon, Colo., Neb., Minn.

Minn. valley: Forest district; rare or infrequent; wet fields and edges of thickets.

HERB.: *Leiberg 103*, Blue Earth Co.

Panicum latifolium LINN. Spec. 59 (1753).

P. walteri POIR. Enc. Suppl. IV, 282 (1816).

P. clandestinum HOOK. Fl. Bor.-Am. II, 235 (1840).

Wats. and Coult., Gray's Man., 6 ed. 632; Britt., Fl. N. J. 280; Mac., Fl. Can. II, 179; Chap., Fl. So. St. 575; Cov., Fl. Ark. 232; Vas., Mon. 33.

North America: Q., Ont., N. Y., N. J. and Fla.; W. to Minn., Mo. and Ark.

Minn. valley: Forest district; infrequent; thickets and damp copses or woodland.

HERB.: *Sheldon 620*, Wilton, Waseca Co.; *Ballard 487*, Prior's Lake, Scott Co.; *Oestlund 345*, Hennepin Co.

Panicum xanthophysum GRAY, Gram. I, 28 (1835).

Wats. and Coult., Gray's Man., 6 ed. 631; Upham, Fl. Minn. 172; Mac., Fl Can. II, 180; Vas., Mon. 29.

North America: Ont. to Man., Saskatchewan and Assiniboia; S. to Maine and Penn.; W. to Minn., Wisc., Iowa and Dak.

Minn. valley: Forest district; rare; sandy soil along embankments or beside ponds or streams.

HERB.: *Sheldon 555*, Waseca.

Panicum virgatum LINN. Spec. 59 (1753).

Wats. and Coult., Gray's Man., 6 ed. 631; Britt., Fl. N. J. 282; Upham, Fl. Minn. 172; Mac., Fl. Can. II, 180; Webb., Fl. Neb. 106; Coult., Fl. Colo. 403; Chap., Fl. So. St. 573; Vas., Ag. Grasses U. S. 28; Cov., Fl. Ark. 223; Vas., Mon. 36.

North America: Ont. to L. Huron region, Saskatchewan and Assiniboia; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Colo., Mo. and Ark.

Minn. valley: Throughout; especially in prairie district; sandy soil and embankments.

HERB.: *Sheldon, 1206*, New Ulm; *Oestlund 341*, Minneapolis; *342*, Minneapolis; *Foote 9*, Worthington; *Sandberg 598*, Red Wing.

Panicum agrostoides MUHL. Gram. 119 (1817).

P. multiflorum POIR. Suppl. Enc. IV, 282 (1817).

P. elongatum PURSH, Fl. Am. I, 69 (1814).

Wats. and Coult., Gray's Man. 6 ed. 631; Mac., Fl. Can. II, 176; Britt., Fl. N. J. 281; Vas., Ag. Grasses U. S. 28; Webb., Fl. Neb. 106; Wats., Fl. Calif. II, 258; Upham, Fl. Minn. 172; Cov., Fl. Ark. 232; Vas., Mon. 35.

North America: Mass. and N. J. to Minn. and Vancouver; S. to Gulf of Mexico and to Sacramento, Calif.

Minn. valley: Reported from N. E. districts; rare; damp fields and shores of lakes or along streams.

Panicum nudum WALT. Fl. Car. (1788).

P. dichotomiflorum MICHX. Fl. N. Am. (1803).
P. divergens MUHL. Gram. (1817).
P. autumnale BOSC. Mem. (1822).
P. fragile KUNTH, Enum. (1833).

Wats. and Coult., Gray's Man. 6 ed. 630; Upham, Fl. Minn. 172; Vas., Mon. 33.

North America: Ill. to S. Minn., Mo. and Tex?

Minn. valley: Reported from S. central region; rare or doubtful; hillsides or plains; sandy soil.

Panicum capillare LINN. Spec. 58 (1753).

Milium capillare MOENCH, Meth. 203 (1794).
? *Panicum strigosum* ELL. Sk. I, 126 (1821).

Wats. and Coult., Gray's Man. 6 ed. 630; Britt., Fl. N. J. 281; Mac., Fl. Can. II, 177; Wats., Fl. Calif. II, 258; Coult., Fl. Colo. 403; Webb., Fl. Neb. 106; Chap., Fl. So. St. 574; Upham, Fl. Minn. 172; Richt., Pl. Eur. I, 26; Led., Fl. Ross. IV, 470; Wats., King Exp. 394; Cov., Fl. Ark. 232; Vas., Mon. 33.

Introduced in S. Europe and Russia.

North America: N. S., N. Br., Q., Ont. to Saskatchewan, Man., Brit. Col. and Vancouver; S. to N. Eng., N. J. and Fla.; W. to Pac. coast and S. Calif.

Minn. valley: Throughout; abundant; dry fields and along embankments.

HERB.: *Taylor 1155,* Glenwood; *Sheldon 956,* Redwood Falls; *Sheldon 1460,* Pipestone; *Foote 8,* Worthington; *Oestlund 340,* Hennepin Co.; *Sandberg 597,* Red Wing; *Sheldon 1529,* Lake Benton; *Herb. Sheld. 1671,* Minneapolis.

CENCHRUS LINN. Gen. Corr. n. 989 (1737), p. p.

Benth. and Hook., *Gen. Pl.* III. 1105; Durand, *Ind. Gen. Phan.* 467; Engler and Prantl, *Nat. Pflanz.* 2, II. 36 (Hackel).

Living species: 12; tropical and subtropical regions and in temperate N. and S. America. N. America, 4, So. Sts., 4; E. Sts., 1; California, 1; Rocky Mts., 1; Pl. King., 1.

Cenchrus tribuloides LINN. Spec. ed. II. 1488 (1762).

C. carolinianus WALT. Fl. Car. 79 (1788).
C. echinatus MUHL. Gram. 52 (1817).

Wats. and Coult., Gray's Man. 6 ed. 634; Britt., Fl. N. J. 282; Mac., Fl. Can. II. 181; Webb., Fl. Neb. 106; Wats., Fl. Calif. I. 261; Coult., Fl. Colo. 404; Chap., Fl. So. Sts. 579; Upham, Fl. Minn. 173; Engl. Hackel, Nat.

Pflanz. II. 2, 36; Gris., Fl. W. I.; Wats., King Exp. 394; Cov., Fl. Ark. 232; Vas., Mon. 39.

Africa? Jamaica, Antigua and East Indies.

North America: N. Eng. to Fla.; W. to Calif. and Oregon; Ontario, introduced (?).

Minn. valley: Throughout; sandy or waste places along streams and roadsides or embankments.

HERB.: *Sheldon 1190*, New Ulm; *Leiberg 105*, Minnesota valley; *Kassube 275*, Minneapolis; *Sandberg 601*, Goodhue Co.; *Oestlund 348*, Minneapolis; *Holzinger 295*, Winona Co.; *Herb. Sheld. 1706*, Minneapolis.

ZIZANIA LINN. Gen. ed., II. 863 (1742) em.

Hydropyrum LINK. Hort. Berol. 1. 252 (1827).
Melinum LINK. Handb. Nutz. Gew. I. 96 (1829)
Zizaniopsis DOELL. and ASCH. Mart. Fl. Bras. II. 2, 12 (1833?).

Benth. and Hook., *Gen. Pl.* III. 1115; Durand, *Ind. Gen. Phan.* 468; Engler and Prantl, *Nat. Pflanz.* 2, II. 40 (Hackel).

Living species: 2; N. and S. America; N. E. Asia, E. U. S. and Can, 1; S. U. S. and Brazil, 1.

Zizania aquatica LINN. Spec. 991 (1753).

Z palustris LINN. Mant. II. 295 (1771).
Z. clavulosa MICHX. Fl. N. Am. I. 75 (1803).
Hydropyrum esculentum LINK, Hort. Berol. I. 252 (1827).

Wats. and Coult., Gray's Man. 6 ed. 635; Britt., Fl. N. J. 283; Upham, Fl. Minn. 159; Chap., Fl. So. St. 549; Webb., Fl. Neb. 105; Mac., Fl. Can. II, 183; Vas. Ag. Grasses U. S. 33; Engl. Hackel, Nat. Pflanz. II. 2.40; Cov., Fl. Ark, 233; Vas., Mon. 41.

Siberia and Japan.

North America: Newf. N. S., N. Br., Q., Ont., Man.; S. to Penn. and Fla,; W. to Minn., Neb., Mo., Ark. and Tex.

Minn. valley: Throughout; somewhat local; shallow waters; edges of lakes and narrows between ponds.

HERB.: *Taylor 222*, Janesville; *Taylor 1019*, Glenwood; *Sandberg 554*, Red Wing.

HOMALOCENCHRUS MIEG. ex. Hall, Stirp. Helv. II. 201 (1768).

Leersia SWARTZ, Nov. Gen. et. Spec. 21 (1788).
Ehrhartia WIGG. Prim. Holst. 63 (1780).
Asprella SCHREB. Gen. Pl. 45 (1789).
Blepharochloa ENDL. Gen. Pl. 1352 (1840).

Benth. and Hook., *Gen. Pl.* III. 1117; Durand, *Ind. Gen. Phan.* 468; Engler and Prantl. *Nat. Pflanz.* 2, II. 41 (Hackel); O. Kuntze, *Rev. Gen.* II. 777

Living species: 5; America, 3 endem.; Old World, temperate regions, 1; tropical regions, 1; U. S., 4; Atlantic States, 3; Tex., 1.

Homalocenchrus oryzoides (LINN.) POLL. Fl. Palat., I. 52 (1776).

Phalaris oryzoides LINN. Spec. 55 (1753).
Ehrhartia clandestina WIGG. Fl. Holst. 695 (1780).
Asprella oryzoides LAM. Ill. I. 167 (1791).
Leersia oryzoides SW. Fl. Ind. Occ. I. 132 (1797).
Oryza clandestina A. BR. Asch. Fl. Brand. 799 (1864).

Wats. and Coult., Gray's Man. 6 ed. 635; Britt., Fl. N. J. 284; Webb., Fl. Neb. 105; Upham, Fl. Minn. 159; Wats., Fl. Calif. II. 262; Mac., Fl. Can. II. 184; Vas. Ag. Grasses U. S. 34; Chap., Fl. So. St. 548; Engl., Häckel, Nat. Pflanz. II. 2, 41; Richt., Pl. Eur. I. 28; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 471; Led., Fl. Ross. IV. 466; Cov., Fl. Ark. 233; Hart., Fl. Scand. I. 571; Vas., Mon. 41.

Northern, Central and Southern Europe; Temperate Asia; N. Africa.

North America: Newf., N. S., N. Br., Q., Ont. to Saskatchewan; Oregon to Calif.; Atl. Region to Fla. and W. to Missouri river valley.

Minn. valley: Throughout, principally in forest district; sloughs and marshes.

HERB.: *Taylor 1159*, Glenwood; *Oestlund 221–222*, Hennepin Co.; *Sandberg 557*, Red Wing.

Homalocenchrus virginicus (WILLD.) BRITT. Fl. N. J. 285 (1890).

Leersia virginica WILLD. Spec. I. 325 (1797).
Asprella virginica R. and S. Syst. II. 266 (1817).

Wats. and Coult., Gray's Man. 6 ed. 635; Upham, Fl. Minn. 159; Webb. Fl. Neb. 105; Mac., Fl. Can. II. 184; Chap., Fl. So. St. 548; Vas. Ag. Grasses U. S. 34; Cov., Fl. Ark. 233; Vas., Mon. 41.

North America: Newf. to Maine, N. Y., N. J., Penn. and Fla.; W. to Ont., Ott., Minn., Neb., Ark., La. and Tex.

Minn. valley: Forest district; rare or infrequent; low and marshy woodland.

HERB.: *Oestlund 220*, Hennepin Co.; *Sandberg 556*, Goodhue Co.

PHALARIS LINN. Gen. 38 (1737).

Digraphis TRIN. Fund. Agr. 127 (1820).
Baldingera GAERTN. Mey. et. Schreb., Fl. Wett. (1799).
Typhodes MOENCH, Meth. 201 (1794).

Benth. and Hook., *Gen. Pl.* III. 1138; Durand, *Ind. Gen. Phan.* 468; Engler and Prantl, *Nat. Pflanz.* 2, II. 43 (Hackel).

Living species: 10; Europe; Mediterranean region; Canaries; extratropical America. Principally in S. Europe; Europe, 9; Russia, 3; N. America, 5–6; Pac. America, 3; Atl. America, 3; of which 1 is introduced.

Phalaris arundinacea LINN. Spec. 55 (1753).
Calamagrostis variegata WITH. Arr. Brit. Pl. 124 (1776).
Typho des arundinacea MOENCH, Meth. 202 (1794).
Arundo colorata WILLD. Spec. I. 457 (1797).
Baldingera colorata GAERTN. Fl. Wett. 99 (1799).
Calamagrostis colorata DC. Fl. Fr III. 26 (1805).
Digraphis arundinacea TRIN. Fund. Agr. 130 (1820).
Baldingera arundinacea DUM. Agr. Belg. 130 (1823).
Phalaris americana TORR. Fl. U. S. I. 100 (1824).

Wats. and Coult., Gray's Man. 6 ed. 639; Britt., Fl. N. J. 285; Mac., Fl. Can. II. 185; Webb., Fl. Neb. 105; Wats., Fl. Calif. II. 265; Coult., Fl. Colo. 406; Vas., Ag. Grasses U. S. 38; Upham, Fl. Minn. 171; Engl. Hackel, Nat. Pflanz. II. 2, 43; Led., Fl. Ross IV. 454; Richt., Pl. Eur. I. 30; Hook., Fl. Gt. Brit. 472; Miyabe, Fl. Kur. 269; Wats., King Exp. 393; Hart., Fl. Scand. I, 528; Vas., Mon. 42.

Mid. and N. Europe; Asia to Kurile Isls.

North America: N. S., N. Br., Q., Ont. to Hudson Bay, Saskatchewan, Man., Brit. Col., Vancouver; S. to N. Eng., N. J., Penn. and Va; W. to Minn., Neb., Colo., Calif. and Washington.

Minn. valley: Throughout; not infrequent; marshy meadows and wet ground.

HERB.: *Sheldon 456,* Duck Lake, Blue Earth Co.; *Sheldon 1519,* Lake Benton; *Ballard 245,* Jordan, Scott Co,; *Bailey 446,* Mud Lake.

HIEROCHLOE GMEL. Fl. Sib. I. 100 (1747).
Savastana SCHRANK. Bair. Fl. I. 100, 337 (1789).
Disarrenum LABILL. Pl. Nov. Holl, II. 82 (1806).
Torresia R. and P. Prodr. Peruv. 125 (1794).
Ataxia R. BR. Chlo r. Melv. 292 (1824).

Benth. and Hook., *Gen. Pl.* III. 1139; Durand, *Ind. Gen. Phan.* 469; Engler and Prantl, *Nat. Pflanz.* 2, II. 44 (Hackel).

Living species: 13; cosmopolitan; in tropical mts. Europe, 5; Russia, 5; N. America, 4; Calif. and Oregon, 1; Atl. region, 2; Melville's Isl., 1.

Hierochloe odorata (LINN.) WAHL. var. **fragrans** (WILLD.) Richt., Pl. Eur, I. 31 (1890).
Holcus fragrans WILLD. Spec. IV. 936 (1805)
Hierochloa fragrans R. and S. Syst. II. 513 (1817).
H. borealis and *odorata.* AUCT. AMER.

Wats. and Coult., Gray's Man. 6 ed. 639; Britt., Fl. N. J. 285; Wats., Fl. Calif. II. 266; Coult., Fl. Colo. 406; Mac., Fl. Can. II. 187; Upham, Fl.

Minn. 171; Engl. Hackel, Nat. Pflanz. II. 2, 44; Hook., Fl. Gt. Brit. 473? Trautv, Fl. Sib. 139? Miyabe, Fl. Kur. 269? Wats., King Exp. 393; Roth., Wheel. Exp. 294; Vas., Mon., 43; Rothr., Alaska 458.

N. Europe and possibly N. Asia and Kurile Isls.

North America: Labrador and Newf to Hudson Bay and Alaska; S. to N. Eng., N. J.; W. to Gt. Lake region and Oregon to Calif. and Washington.

Minn. valley: Throughout; common; damp fields and marshy meadows.

HERB.: *Sheldon 175*, Eagle Lake, Blue Earth Co.; *Menzel 7*, Pipestone City; *Gedge 17*, Detroit, Becker Co.; *Bailey 541*, Long Lake; *Sandberg 596*, Goodhue Co.

ARISTIDA LINN. Gen. ed. V. 88 (1754).

Chaetaria, Curtopogon, Arthratherum P.-BEAUV. Agrostogr. 30, 32. (1812).

Streptachne HBK. Nov. Gen. et Spec. I. 124 (1815).

Ortachne NEES, Seem. Bot. Her. 225 (1857).

Stipagrostis NEES, Linn. VII. 290 (1833).

Schistachne FIG. ET NOTAR. Mem. Ac. Tur. 2, XII. 252 ( )

Benth. and Hook., *Gen. Pl.* III. 1140; Durand, *Ind. Gen. Phan.* 469; Engler and Prantl, *Nat. Pflanz.* 2, II. 45 (Hackel).

Living species: 100; warmer regions; few in temperate Eur. and Asia; abundant in N. America. Europe, 2; N. America, 29–30; So. Sts., 17; E. Sts., 10; Canada, 3–4; Tex., N. Mex. and Arizona region, 21.

Aristida purpurea NUTT. Trans. Am. Phil. Soc v. (1837).

Wats. and Coult., Gray's Man. 6 ed. 640; Upham, Fl. Minn 164; Vas., Ag. Grasses U. S. 41; Coult., Fl. Colo. 407; Webb., Fl. Neb. 105; Mac., Fl. Can. II. 190; Roth., Wheel. Exp. 286; Wats., King Exp. 381; Cov., Fl. Ark. 234.

North America: Brit. Col. and Colo. to Tex.; W. to Great Basin region; E. to Dak., Minn., Iowa, Neb., Mo. and Ark.

Minn. valley; S., Central and W. districts; sandy or dry localities.

HERB.: *Sheldon 1379*, Lake Benton; *Leiberg 90*, Blue Earth Co.; *Leiberg 91*, Rock Co.

Aristida basiramea ENGELM. Bot. Gaz. IX. 76 (1884).

Wats. and Coult., Gray's Man. 6 ed. 640; Webb., Fl. Neb. 105; Upham, Fl. Minn. 163; Mac., Fl. Can. II. 190; Coult., Fl. Colo. 407; Vas., Mon. 44.

North America: Man. to Kan., Colo., Neb., Iowa and Ill.

Minn. valley: N. E. and S. W. districts; dry, sandy localities; local or rare.

HERB.: *Upham 3*, Minneapolis; *Upham 4*, Minneapolis.

STIPA LINN. Gen. ed. V. 84 (1754).
Macrochloa KUNTH. Rev. Gram. I. 58 (1835).
Aristella BERTOL. Fl. It. I. 690 (1833).
Streptachne R. BR. Prodr. 174 (1810).
Orthoraphium NEES, Proc. Linn. Soc. I, 94 (1841).
Jarava R. and P. Prodr. Peruv. 2 (1794).
Lasiagrostis LINK, Hort. Berol. I. 99 (1827).
Achnatherum PAL.-BEAUV. Agrostogr. 19 (1812).
Ptilagrostis GRISEB. in Led., Fl. Ross. IV. 447 (1853).

Benth. and Hook., *Gen. Pl.* III. 1141; Durand, *Ind. Gen. Phan.* 469; Engler and Prantl, *Nat. Pflanz.* 2, II. 46 (Hackel).

Living species: 100; tropical and temperate regions; Europe, 12; Russia, 9–10; N. America, 23; Canada, 6; E. Sts., 4; So. Sts. 1; California to Montana and Colo., 15-16; Tex. and N. Mex. region, 7–8.

Stipa spartea TRIN. Act. Petr. I. 440 (1830).

Wats. and Coult., Gray's Man. 6 ed. 641; Upham, Fl. Minn. 163; Webb., Fl. Neb. 104; Coult., Fl. Colo. 408; Mac., Fl. Can. II. 191; Vas. Ag. Grasses U. S. 42; Engl. Hackel, Nat. Pflanz. II. 2, 46; Wats., King Exp. 379; Roth., Wheel. Exp. 285; Vas., Mon. 53.

North America: Prairie region of Can. from Portage la Prairie to Rockies; S. to Colo. and Upper Missouri region; E. to Neb., Iowa, Kan., Minn., Ill. and Mich.

Minn. valley: Throughout; principally in prairie district; dry or high prairies or moister land.

HERB.: *Ballard 173*, Shakopee; *Sheldon 1383*, Lake Benton; *Sheldon 607*, Wilton, Waseca Co.; *Sheldon 746*, Sleepy Eye; *Kassube 272*, Minneapolis; *Herrick 340*, Minneapolis; *Sandberg 564*, Chisago Co.

ORYZOPSIS MICHX. Fl. N. Am. I, 51 (1803).
Dilepyrum RAF. ex. Endl. Gen. 87 (1836).
Urachne TRIN. Fund. Agr. 109 (1820).
Piptatherum BEAUV. Agrostogr. 17 (1812).
Caryochloa SPRENG. Syst. Cur. Post. 22, 30 (1827).
Piptochaetium PRESL, Rel. Haenk. I. 222 (1830).
Nassella E. DESVX. in Gay Fl. Chile, VI. 263 (1845).
Eriocoma NUTT. Gen. I. 40 (1818).
Fendleria STEUD. Syn. Glum. I. 419 (1855).
Schousbaea NICOTR. ex. Dur. l. c. (1888).

Benth. and Hook., *Gen. Pl.* III. 1142; Durand, *Ind. Gen. Phan.* 469; Engler and Prantl, *Nat. Pflanz.* 2, II. 46, 47 (Hackel).

Living species: 28; temperate regions N. and S., especially S. America. Europe, 5; N. America, 8; Canada, 4; E. Sts., 4; California and Pac. Coast, 6.

Oryzopsis juncea (MICHX.) B. S. P. Cat. N. Y. (1888).
Stipa juncea MICHX. Fl. N. Am. I. 54 (1803).
S. canadensis POIR. Enc. Meth. VII. 452 (1806).
Milium pungens TORR. Fl. U. S. I. 78 (1824).
Urachne brevicaudata TRIN. Gram. Pan. 27 (1826).
Oryzopsis parviflora HOOK. Fl. Bor. Am. II. 236 (1840).
O. canadensis TORR. Fl. N. Y. II. 433 (1843).

Wats. and Coult., Gray's Man. 6 ed. 642; Mac., Fl. Can. II. 192; Britt., Fl. N. J. 286; Upham, Fl. Minn. 162; Vas., Mon. 55.

North America: St. Lawrence, Q., Ont., to Port Arthur and Saskatchewan, Brit. Col. and Rocky Mts.; S. to W, N. Eng., N, J.; W. to Penn., Wis. and Minn.

Minn. valley: Reported from S. E. edge; rocky or gravelly hillsides.

Oryzopsis asperifolia MICHX. Fl. N. Am. I, 51 (1803).
Urachne leucosperma LINK, Hort. Berol. I, 94 (1828).
U. asperifolia TRIN. Diss. I, 174 (1828).

Wats. and Coult., Gray's Man. 6 ed. 642; Britt., Fl. N. J. 286; Mac., Fl. Can. II. 192; Upham, Fl. Minn. 162; Vas., Mon. 55.

North America: Newf., N. Br., Q., Ont. to Man., Brit. Col., Rocky Mts.; S. to N. Eng., N. J., and Penn.; W. to Minn., Dak. and Mo.

Minn. valley: N. E. and N. districts, woods, hillsides and shaded banks; local or rare.

HERB.: *Sheldon 1926*, Minneapolis.

Oryzopsis melanocarpa MUHL. Gram. 79 (1817).
Milium racemosum SM. Rees, Cyc. (1819?).
Piptatherum nigrum TORR. Fl. U. S. I. 79 (1824).
Urachne racemosa TRIN. Diss. I, 174 (1828).
?*Oryzopsis asperifolia* KUNTH, Enum. I, 176 (1833) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 642; Britt., Fl. N. J. 286; Mac., Fl. Can. II, 193; Upham, Fl. Minn. 162; Vas., Mon. 55.

North America: Ont. to N. Eng., N. J. and Penn.; W. to Minn. and Mo.

Minn. valley: Forest and N. W. districts; dry or rocky woods.

HERB.: *Taylor 949*, Glenwood; *Herrick 339*, Minneapolis.

MUHLENBERGIA SCHREB. Gen. Pl. 44 (1789).
Vaseya THURB. Proc. Phil. Acad. 79 (1863).
Podosaemum DESVX. Bull. Philom. II, 188 (1813).
Trichochloa BEAUV. Agrostogr. 29 (1812).
Bealia SCRIBN. ex. Durand, Ind. Gen. Phan. 469 (1888).
Calycodone NUTT. Jour. Acad. Phil. I, 186 (1817).
Clomena and **Tosagris** BEAUV. Agrostogr. 28, 29 (1812).

Benth. and Hook., *Gen. Pl.* III, 1143; Durand, *Ind. Gen. Phan.* 469; Engler and Prantl, *Nat. Pflanz.* 2, II, 47 (Hackel).

Living species: 60; N. America and Andes of S. America; a few in Japan and the Himalayas. N. America, 37; Canada, 5–6; So. Sts., 7; E. Sts., 8; California, 4–5; Texas, N. Mex. and Arizona region, 31.

Muhlenbergia diffusa SCHREB. Gram; II, t. 51 (1772).

Dilepyrum minutiflorum MICHX. Fl. Am. I, 40 (1803).

Wats. and Coult., Gray's Man. 6 ed. 644; Vas., Mon. Grasses 68; Britt., Fl. N. J. 287; Mac., Fl. Can. II, 194; Webb., Fl. Neb. 104; Vas., Agr. Grasses U. S. 41.

North America: N. Eng., Ont. and N. Y. to Mich., Minn., Iowa and Neb.; S. to Tex.

Minn. valley: S. district; dry hills and woods or banks of streams.

HERB.: *Leiberg 107*, Blue Earth Co.

Muhlenbergia tenuiflora (WILLD.) B. S. P. Cat. N. Y. (1888).

Agrostis tenuiflora WILLD. Spec. I, 364 (1799).
Cinna tenuiflora LINK, Enum. I, 71 (1821).
Muhlenbergia willdenovii TRIN. Diss. I, 188 (1828).

Wats. and Coult., Gray's Man. 6 ed. 643; Britt., Fl. N. J. 287; Mac., Fl. Can. II, 195; Upham, Fl. Minn. 161; Chap., Fl. So. St. 552; Cov., Fl. Ark. 235; Vas., Mon. 68.

North America: Ont. to N. Y., N. J. and N. Car.; W. to Minn., Neb., Mo. and Ark.

Minn. valley: S. central district and probably W.; local or infrequent; rocky or gravelly woodland and hillsides.

Muhlenbergia ambigua TORR. Nicollet Rep. (1841).

M. sylvatica var. *setiglumis* WATS. Bot. King. Exp. 378 (1871).

Wats. and Coult., Gray's Man. 6 ed. 643; Upham, Fl. Minn. 161; Vas., Mon. 69.

North America: S. Minn. and Humboldt Pass, Nev. at 6,000 ft. alt.

Minn. valley: Shore of Lake Elysian, Waseca Co., Minn.; local, and possibly exterminated.

HERB.: *Columbia College* (type.), "*Lake Okaman*," *Nicollet; Harvard College, Wats. 1288; Humboldt Pass, Nev.*

Muhlenbergia mexicana (LINN.) TRIN. Diss. I, 189 (1828).

Agrostis mexicana LINN. Mant. 31 (1767).
A. lateriflora MICHX. Fl. N. Am. I, 53 (1803).
A. filiformis MUHL. Gram. 66 (1817).
A. foliosa R. and S. Syst. II, 373 (1817).
Cinna mexicana LINK, Enum. I, 71 (1821).
Agrostis lateriflora var. *filiformis* TORR. Fl. U. S. I, 86 (1824).
Muhlenbergia foliosa TRIN. Diss. I, 190 (1828).

Wats. and Coult., Gray's Man. 6 ed. 643; Britt., Fl. N. J. 287; Mac., Fl. Can. II, 194; Upham, Fl. Minn. 161; Vas., Ag. Grasses U. S. 43; Webb., Fl. Neb. 104; Chap., Fl. So. St. 552; Coult., Fl. Colo. 409; Cov., Fl. Ark. 235; Vas., Mon. 69.

North America: N. Br., Q., Ont., L. Superior to Minn., Dak., Wyoming; S. to N. Eng., N. J. and N. Car.; W. to Neb., Mo., Ark. and Ind. Terr.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; low grounds and along streams.

HERB.: *Bailey 422*, Long Lake; *Oestlund 325*, Minneapolis; *Sandberg 560*, Red Wing.

Muhlenbergia racemosa (MICHX.) B. S. P. Cat. N. Y. (1888).

Agrostis racemosa MICHX. Fl. N. Am. I, 53 (1803).
Polypogon glomeratus WILLD. Enum. I, 87 (1809).
Agrostis setosa MUHL. Gram. 68 (1817).
Polypogon racemosus NUTT. Gen. I, 51 (1818).
Trichlochloa glomerata and *calycina* TRIN. Fund. Agrost. 117 (1820).
Muhlenbergia glomerata TRIN. Diss. (1828).
Polypogon setosus SPRENG. Mant. I, 31 (1827).
Cinna racemosa KUNTH, Enum. I, 207 (1833).

Wats. and Coult., Gray's Man. 6 ed. 643; Britt., Fl. N. J. 287; Mac., Fl. Can. II, 194; Vas., Ag. Grasses U. S. 43; Webb., Fl. Neb. 104; Upham, Fl. Minn. 161; Vas., Mon. 68.

North America: N. Br., Q., Ont. to Man., Saskatchewan, Brit. Col. and Rocky Mts.; S. to N. Eng., N. Y. and N. J.; W. to Ill., Minn., Dak., Neb. and Utah.

Minn. valley: Throughout; bogs, moist or dry soil, cultivated fields.

HERB.: *Taylor 1184½*, Glenwood; *Sheldon 1448*, Pipestone; (var. *ramosa* Vasey); *Taylor 1184*, Glenwood; *Sheldon 1284*, Lake Benton; *Sheldon 1478½*, Pipestone; *Ballard 797*, Goose Lake, Carver Co.; *Leiberg 89*, Blue Earth Co.; (all var. *ramosa*); *MacM.* and *Sheld. 9*, Brainerd; *Foote 4*, Worthington; *Sandberg 559*, Red Wing; *Upham 2*, Minneapolis (var. *ramosa* Vas.).

Muhlenbergia sobolifera (MUHL.) TRIN. Diss. I, 187 (1824).

Agrostis sobolifera MUHL. Willd. Enum. 95 (1809).
Cinna sobolifera LINK, Enum. I, 71 (1821).

Wats. and Coult., Gray's Man. 6 ed. 644; Britt., Fl. N. J. 287; Upham, Fl. Minn. 161; Richt., Pl. Eur. I, 42; Cov., Fl. Ark. 235; Vas., Mon. 68.

Central Europe.

North America: Mass. to Mich. and Minn.; S. to N. J., Mo. and Ark.

Minn. valley: Reported from S. E. districts; open or rocky woods.

BRACHYELYTRUM PAL.-BEAUV. Agrostogr. 39 (1812).

Benth. and Hook., *Gen. Pl.* III, 1144; Durand, *Ind. Gen. Phan.* 469; Engler and Prantl, *Nat. Pflanz.* 2, II, 47 (Hackel).

Living species: 1; N. America.

Brachyelytrum aristosum (MICHX.) B. S. P. Cat. N. Y. (1888).

Dilepyrum aristosum MICHX. Fl. N. Amer. I, 40 (1803).
Muhlenbergia aristata PERS. Syn. I. 76 (1805).
Brachyelytrum aristatum P. DE B. Agrost. 39 (1812).
Muhlenbergia brachyelytrum TRIN. Diss. I, 188 (1828).

Wats. and Coult., Gray's Man. 6 ed. 644; Mac., Fl. Can. II, 195; Webb., Fl. Neb 104; Chap., Fl. So. St. 553; Upham, Fl. Minn. 162; Engl. Hackel, Nat. Pflanz. II, 2, 47; Cov., Fl. Ark. 235; Vas., Mon. 71.

North America: N. S., Q., Ont. to Owen Sound and north shore of L. Superior; S. to N. Y., N. J. and Fla.; W. to Minn., Neb., Ark. and Mo.

Minn. valley: Forest district; infrequent; rocky woods and copses.

HERB.: *Ballard 397,* Jordan, Scott Co.; *Bailey 397,* Mud Lake.

ALOPECURUS LINN. Gen. 50 (1737).

Colobachne PAL.-BEAUV. Agrostogr. 22 (1812).
Tozzettia SAVI, Mem. Soc. It. Sci. VIII, 477 (1868).

Benth. and Hook., *Gen. Pl.* III, 1140; Durand, *Ind. Gen. Phan.* 470; Engler and Prantl, *Nat. Pflanz.* 2, II, 48 (Hackel).

Living species: 20; 40 described; Europe and extra tropical Asia; a few species in N. and S. America and Australia, doubtfully indigenous. Europe, 14; Russia, 11; N. America, 8; California, 3; Rocky Mts., 2; So. Sts., 1; Canada, 4–5; E. Sts., 1; Pl. King, 1–2; Pl. Wheel., 1–2; Pac. coast, 7–8.

Alopecurus geniculatus LINN. var. **aristulatus** (MICHX.) MUNRO, Torr. Fl. U. S. I, 97 (1824).

A. aristulatus MICHX. Fl. N. Am. 43 (1803).
A. subaristatus PERS. Syn. I, 80 (1805).
A. fulvus KUNTH, Enum. I, 24 (1833).

Wats. and Coult., Gray's Man. 6 ed. 645; Britt., Fl. N. J. 285; Webb., Fl. Neb. 105; Wats., Fl. Calif. II, 263; Upham, Fl. Minn. 160; Coult., Fl. Colo. 407; Mac., Fl. Can. II, 188; Vas., Ag. Grasses U. S. 40; Richt., Pl. Eur. I, 38 (spec.); Miyabe, Fl. Kur. 269 (spec.); Wats., King Exp. 375; Roth., Wheel. Exp. 281; Cov., Fl. Ark. 234; Hart., Scand. Fl. I, 576 (spec.); Vas., Mon. 87.

North America: Newf., Anticosti, N. S., N. Br., Ont., Man., N. W. T., to Columbia and Vancouver; N. to lat. 55°; S. to N. Y., Penn.; W. to Minn., Neb., Colo., Calif., Oregon; not very abundant south of this range, though occasional even to the Gulf of Mexico.

Minn. valley: Throughout; abundant; in wet meadows or ditches, or along edge of ponds.

HERB.: *Ballard 265,* Jordan, Scott Co.; *Taylor 83,* Lake Custan, Le Sueur Co.; *Sheldon 213,* Lake Ballentyne, Blue Earth Co.; *Sheldon 688,* Waseca; *Sheldon 916,* Sleepy Eye; *Leiberg 88,* Blue Earth Co.; *Sandberg 555,* Chisago Lake.

SPOROBOLUS R. BR. Prodr. 169 (1810).

Vilfa P. BEAUV. Agrostogr. 16 (1812).
Agrosticula RADDI, Agrost. Bras 33 (1823).
Triachyrum HOCHST. Steud. Syn. Glum. I, 176 (1855).
Cryptostachys STEUD. Syn. Glum. I, 181 (1855).
Diachyrium GRISEB. Pl. Lorentz. 209 (1874).
Spermachiton LLAN. Frag. Phil. 25 (1851).

Benth. and Hook., *Gen. Pl.* III, 1148; Durand, *Ind. Gen. Phan.* 470: Engler and Prantl, *Nat. Pflanz.* 2, II, 49 (Hackel).

Living species: 80; temperate and tropical America; some in warmer Africa; Asia; 1 in S. Europe. U. S., 31; Atl. states, 12; Pac. states, 5–6; Texas and Arizona region, 24; Rocky Mts., 10; Canada, 6–7.

Sporobolus cryptandrus (TORR.) GRAY, Man. ed. 2, 542 (1852).

Agrostis cryptandra TORR. Ann. Lyc. N. Y. I, 151 (1824).
Vilfa cryptandra TRIN. Agrost. I, 47 (1840).

Wats. and Coult., Gray's Man. 6 ed. 646; Mac., Fl. Can. II, 197; Webb., Fl. Neb. 104; Wats., Fl. Calif. II, 268; Coult., Fl. Colo. 411: Mac., Fl. Can. II, 391; Wats., King Exp. 375; Upham, Fl. Minn. 160; Vas., Mon. 62.

North America: Ont. to Assiniboia and Brit. Col.; S. to N. Eng., Minn., Kan., Neb., Tex., N. Mex.; W. to Colo. and Oregon.

Minn. valley: Forest district and S. W.; dry or waste places.

HERB.: *Oestlund 223, 224,* Hennepin Co.

Sporobolus heterolepis GRAY, Man. ed. V, 610 (1868).

Vilfa heterolepis GRAY, Ann. Lyc. N. Y. III, 233 (1836).

Wats. and Coult., Gray's Man. 6 ed. 646; Webb., Fl. Neb. 104; Mac., Fl. Can. II, 198; Upham, Fl. Minn. 160; Cov., Fl. Ark. 235; Vas., Mon. 62.

North America: Ont., Georgian Bay, N. W. Man. and Assiniboia; S. to Conn, N. Y., Penn.; W. to Minn., Neb., Mo. and Texas.

Minn valley: Forest district and westward; infrequent; dry or sandy places; along railways.

HERB.: *Sheldon 1368,* Verdi, Lincoln Co.

Sporobolus junceus (MICHX.) KUNTH, Enum. I (1833).

Agrostis juncea MICHX. Fl. N. A. I (1803).
Vilfa juncea TRIN. Diss. (1828).

Wats. and Coult., Gray's Man. 6 ed. 646; Upham, Fl. Minn. 160; Chap., Fl. So. St. 550; Vas., Mon. 63.

North America: Penn. to Wis., Minn. and Dak.; S. to Fla. and La.; more abundant southward. Tex.

Minn valley: Reported from S. central district; rare; dry or barren localities.

Sporobolus depauperatus (TORR.) SCRIB. Torr. Bull. IX 103 (1882).

Vilfa depauperata TORR. Hook., Fl. II, 257 (1840).
V. utilis TORR. Pac. R. R. Rep. V, 365 (1856).

Wats. and Coult., Gray's Man. 6 ed. 646; Vas., Mon. 61; Mac., Fl. Can. II, 197; Webb., Fl. Neb. 104; Coult., Fl. Colo. 411; Upham, Fl. Minn. 160.

North America: Brit. Colo. and Rocky mt. region to Arizona and Mexico.

Minn. valley: S. c. to W. districts; dry or waste places.

HERB.: *Sheldon 1591½*, Lake Benton; *Leiberg 108, 109*, Blue Earth Co.

Sporobolus cuspidatus (TORR.) SCRIB. Torr. Bull. IX, 103 (1882).

Vilfa cuspidata TORR.
? *Agrostis cryptandra* TORR. Ann. Lyc. N. Y. I, 151 (1824).

Wats. and Coult., Gray's Man. 6 ed. 646; Webb., Fl. Neb. 103; Upham, Fl. Minn. 160; Coult., Fl. Colo. 411; Mac., Fl. Can. II, 197; Vas., Mon. 60.

North America: N. Br., Q., Ont., Man., Saskatchewan and Rocky mts.; S. to Maine, Minn., Iowa, Neb. and Mo.; W. to Colo.

Minn. valley: Reported from N. E. and S. E. districts; dry or barren localities.

Sporobolus vaginæflorus (TORR.) VAS. Cat. Grass. U. S. 45 (1885).

Agrostis virginica MUHL. Gram. 74 (1817) not Linn.
Vilfa vaginæflora TORR. in Gray Gram. and Cyp. I, 3 (1834).

Wats. and Coult., Gray's Man. 6 ed. 645; Upham, Fl. Minn. 160; Britt., Fl. N. J. 288; Chap., Fl. So. St. 551; Webb, Fl. Neb. 104; Mac., Fl. Can. II, 198; Cov, Fl. Ark. 235; Vas., Mon. 60.

North America: Maine to Ont. and Minn.; S. to N. J., N. Car.; W. to Neb., Mo., Ark. and Tex.

Minn. valley: N. E. district and to S central district; barren or waste places.

Sporobolus asper (MICHX.) KUNTH, Enum. I, 210 (1833).

Agrostis aspera MICHX. Fl. N. Am. I, 53 (1803).
Vilfa aspera P. DE B. Agrost. 16 (1812).
? *Muhlenbergia clandestina* TRIN. Diss. I, 190 (1824).
Vilfa hookeri TRIN. Agrost. 84 (1840).
Agrostis clandestina SPRENG. Syst. I, 32 (1824).
Vilfa longifolia TORR. in Gray, Gram. 4 (1834).
Agrostis longifolia TORR. Fl. U. S. I, 90 (1824).

Wats. and Coult., Gray's Man. 6 ed. 645; Britt., Fl. N. J. 288; Upham, Fl. Minn. 160; Webb., Fl. Neb. 103; Chap., Fl. So. St. 551; Cov., Fl. Ark., 235; Vas., Mon. 59.

North America: N. Eng., N. J., Va. and Fla.; W. to Minn., Neb. and Ark.

Minn. valley: Reported from S. central district; sandy hills, fields, dry places and roadsides.

CINNA LINN. Gen. ed. V, 15 (1754).

Abola ADANS. Fam. II, 31 (1763).
Blyttia FRIES, Novit. Fl. Suec. Mant. II, 2 (1839).

Benth. and Hook., *Gen. Pl.* III, 1151; Durand, *Ind. Gen. Phan.* 471; Engler and Prantl, *Nat. Pflanz.* 2, II, 50 (Hackel).

Living species: 2; N. Europe and N. America. N. America, 2; Europe, 1.

Cinna arundinacea LINN. Spec. 7 (1753).

Agrostis cinna LAM. Ill. I, 162 (1791).
Muhlenbergia cinna TRIN. Diss. I, 191 (1824).
M. pendula BONG. ex. Vas. Mon. l. c. (1892).
Blyttia suaveolens FRIES, Mant. II, 2 (1832–42).
Cinna latifolia GRISEB. Ledeb. Fl. Ross. IV, 435 (1853).

Wats. and Coult., Gray's Man. 6 ed. 649; Britt., Fl. N. J. 289; Mac., Fl. Can. II, 202; Upham, Fl. Minn. 161; Vasey, Ag. Grasses U. S. 47; Chap., Fl. So. St. 552; Engl. Hackel, Nat. Pflanz. II, 2, 50; Cov., Fl. Ark. 235; Vas., Mon. 57.

North America: Newf., N. S., Q., Ont. to Saskatchewan; S. to N. Eng., N. Y., N. J., N. Car.; W. to Minn., Ark., La. and Tex.; N. Rocky mts. to Oregon and Washington.

Minn. valley: Forest district; infrequent; woods and swamps.

AGROSTIS LINN. Gen. 54 (1737) p. p.

Vilfa ADANS. Fam. II, 495 (1763).
Trichodium MICHX. Fl. Bor.-Am. I, 41 (1803).
Agraulus P. BEAUV. Agrostogr. 5 (1812).
Bromidium NEES, Pl. Meyen, 154 (1835).
Didymochæta STEUD. Syn. Glum. I, 185 (1855).
Chamæcalamus MEYEN, Pl. Reise I, 456 (1835).

Benth. and Hook., *Gen. Pl.* III, 1149; Durand, *Ind. Gen. Phan.* 471; Engler and Prantl, *Nat. Pflanz.* 2, II, 50 (Hackel).

Living species: 100; cosmopolitan; especially in N. temperate regions. Europe, 38; Russia, 20; N. America, 26; Canada, 15; California, 14; E. Sts., 6; Rocky mts., 5; Pl. Wheel., 7; Pl. King, 4.

Agrostis hiemalis (WALT.) B. S. P. Cat. N. Y. (1888).

Cornucopia hiemalis WALT. Fl. Car. 74 (1788).
Agrostis scabra WILLD. Spec. I, 370 (1799).
Trichodium laxifolium MICHX. Fl. N. Am. I, 42 (1803).
T. scabrum MUHL. Gram. 61 (1817).
Agrostis laxiflora HOOK. Fl. Bor.-Am. II, 240 (1840) in part.
A. oreophila TRIN. Agrost. II, 77 (1841).
A. michauxii TRIN. Agrost. II (1841).

Wats. and Coult., Gray's Man. 6 ed. 648; Britt., Fl. N. J. 288; Webb., Fl. Neb., 103; Mac., Fl. Can. II, 199; Chap., Fl. So. St. 551; Wats., Fl. Calif. II, 274; Coult., Fl. Colo. 412; Wats., King Exp. 377; Roth., Wheel. Exp. 283; Cov., Fl. Ark. 235; Vas., Mon. 75.

Siberia.

North America: Newf., Ont., Man., Brit. Col. to 60° N. lat., Athabasca and Unalascha; S. to N. Eng., N. J., Fla.; W. throughout the continent.

Minn. valley: Forest district, and perhaps throughout; dry or sunny banks and openings in forest.

HERB.: *Taylor 657*, Cobb river, Blue Earth Co.; *Sheldon 662*, Waseca; *Ballard 639*, Chaska; *Ballard 251*, Jordan, Scott Co.; *MacM. and Sheld. 71*, Brainerd; *Bailey 129*, Vermilion Lake; *Sandberg 558*, Red Wing; *Herrick 338*, Minneapolis.

Agrostis rubra LINN. var. **alpina** (Oakes).

A. canina var. *alpina* OAKES, Cat. Vermont Pl. (1842).
A. pickeringii TUCK. Sill. Journ. XLV, 42 (1843).
A. rupestris CHAP. Fl. So. St. 551 (1860) not all.
A. canina GRAY, Man. ed. V, 611 (1867).
A. rubra var. *americana* SCRIBN. Mac., Fl. Can. II, 391 (1890).

Wats. and Coult., Gray's Man. 6 ed. 648; Chap., Fl. So. St. 551; Coult., Fl. Colo. 412; Mac., Fl. Can. II, 198; Wats., King Exp. 377; Upham, Fl. Minn. 161.

North America: Newf., N. S., N. Br., Q., to N. Y., N. J. and N. Car.; W. across cont.; Alaska?

Minn. valley: Reported from S. W. edge; high plains and headlands; rare.

Agrostis perennans (WALT.) TUCKERM. Gray, Man. ed. V, 611 (1868).

Cornucopia perennans WALT. Fl. Car. 74 (1788).
Trichodium decumbens MICHX. Fl. N. Am. I, 42 (1803).
T. perennans ELL. Sk. Car. (1823).
Agrostis laxiflora RICH. Parr. Voy. Appx. (1823).

Wats. and Coult., Gray's Man. 6 ed. 648; Britt., Fl. N. J. 288; Webb., Fl. Neb. 103; Upham, Fl. Minn. 160; Mac., Fl. Can. II, 199; Coult., Fl. Colo. 412; Chap., Fl. So. St. 551; Miyabe, Fl. Kur. 269?; Mac., Fl. Can. II, 392; Roth., Wheel. Exp 283; Cov., Fl Ark. 235; Vas., Mon. 76.

Kurile Isls. (?)

North America: Q., Ont., Ott. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Wyoming, Montana and N. W. coast.

Minn. valley: S. W. and S. central districts; probably throughout; damp and shaded banks or woodland.

HERB.: *Sheldon 863*, Sleepy Eye.

DEYEUXIA CLARION in Pal. Beauv. Agrostogr. 43 (1812).

Lachnagrostis TRIN. Fund. Agr. 128 (1820).
Achæta FOURN. Gram. Mex. 109 (1880).
Relchella STEUD. Syn. Glum. I, 101 (1855).
Cinnastrum FOURN. Gram. Mex. 90 (1880).

.Benth. and Hook., *Gen. Pl.* III, 1152; Durand, *Ind. Gen. Phan.* 471; Engler and Prantl, *Nat. Pflanz.* 2, II, 51 (Hackel).

Living species: 120; temperate and colder regions; mts. of tropics; Andes region, 60; U. S., 28; Europe. 13; Pac. America, 23; Atl. America, 7–8; S. Sts., 3; Canada, 24-26.

Deyeuxia neglecta (EHRH.) KUNTH, Enum. I, 76 (1833).

Arundo neglecta EHRH. Beitr. VI, 137 (1791).
Calamagrostis neglecta GAERTN. Fl. Wett. I, 94 (1799).
Arundo stricta "TIMM. Mecklb. Mag. II, 236"; ex Richt., Pl. Eur. I, 50 (1890).
Calamagrostis stricta NUTT. Gen. I, 47 (1818).

Wats. and Coult., Gray's Man. 6 ed. 650; Mac., Fl. Can. II, 205; Coult., Fl. Colo. 414; Webb., Fl. Neb. 103; Wats., Fl. Calif. II, 281; Upham, Fl. Minn. 162; Trautv., Fl. Sib. 142; Led., Fl. Ross. IV, 428; Vas., Mon. 82; Rothr., Alask. 459.

Europe; temperate Asia.

North America: N. Br., Q , Ont. to L. Superior region, Assiniboia, Rocky mts. and Selkirks; N. to Hudson Bay and 62° N. lat. and Pac. coast; S. to Calif., Colo., Neb., Iowa and Wisc. Labrador.

Minn. valley: Forest district to S. central district; rocky woods or low meadows.

HERB.: *Cratty 2*, Emmet Co., Iowa; state line.

Deyeuxia canadensis (MICHX.) P. DE B. Agrost. (1812).

Arundo canadensis MICHX. Fl. N. Am. I, 73 (1803).
Calamagrostis canadensis P. DE B. Agrost. (1812).
Arundo agrostoides PURSH, Fl. Am. 83 (1814).
A. cinnoides MUHL. Gram. 187 (1817).
Calamagrostis mexicana NUTT. Gen. I, 46 (1818).

Wats. and Coult., Gray's Man. 6 ed. 650; Mac., Fl. Can. II, 204; Upham, Fl. Minn. 162; Britt., Fl. N. J. 289; Webb., Fl. Neb. 103; Vas., Ag.

Grasses U. S. 48; Wats., Fl. Calif. II, 279; Coult., Fl. Colo. 413; Led., Fl. Ross. IV, 429; Mac., Fl. Can. II, 393; Roth., Wheel. Exp. 285; Cov., Fl. Ark. 235; Vas., Mon. 80; Rothr., Alask. 459.

Baikal region, Siberia to Unalascha.

North America: Newf., Hudson Bay to Sitka, Alaska; S. throughout Can.; S. to N. Eng., N. J. and Va.; W. to Rocky mts. and N. Mex.

Minn. valley: Throughout; principally forest district; meadows and along streams.

HERB.: *Ballard 374,* Helena, Scott Co.; *Ballard 582,* Rice Lake, Scott Co.; *Sandberg 561,* Red Wing; *Roberts 262,* Agate Bay; *Bailey 529,* Agate Bay; *Bailey 10,* Vermilion Lake; *Bailey 256,* Vermilion Lake; *Sandberg 562,* Chisago Co.

AMMOPHILA HOST. Gram. Austr. IV, 24 (1809).

Psamma P. BEAUV. Agrostogr. 143 (1812).

Calamovilfa HACKEL in Scrib. Trans. Gram. (1890).

Benth. and Hook., *Gen. Pl.* III, 1153; Durand, *Ind. Gen. Phan.* 471; Engler and Prantl, *Nat. Pflanz.* 2, II, 51 (Hackel).

Living species: 4 or more?; N. America, 4; N. hemisphere, 2; Atl. N. America, 4; Pac. N. America, 2.

Ammophila longifolia (HOOK.) B. and H. Gen. Pl. III, 1153 (1883).

Calamagrostis longifolia HOOK. Fl. Bor.-Am. II, 241 (1840).

Calamovilfa longifolia HACK. in Scrib. and Southw. trans. Engl. and Prantl, Nat. Pflanz. II, 2, (Gramin. Hackl.) 113 (1890).

Wats. and Coult., Gray's Man. 6 ed. 651; Mac., Fl. Can. II, 208; Upham, Fl. Minn. 162; Webb., Fl. Neb. 103; Coult., Fl. Colo. 413; Cov., Fl. Ark. 235; Vas., Mon. 84.

North America: Prairie region of Canada; S. to Minn., Ill., Neb., Dak., Kan., Mich., Ark., Colo. and Arizona; W. to Utah.

Minn. valley: Throughout at lower levels; sandy shores of lakes and streams.

HERB.: *Sheldon 1226,* Iberia, Brown Co.; *Taylor 838,* Glenwood; *MacM. and Sheld. 11,* Brainerd; *Oestlund 526,* Minneapolis; *Sandberg 563,* Red Wing.

DESCHAMPSIA BEAUV. Agrostogr. 91 (1812).

Campella LINK, Hort. Berol. I, 122 (1827).

Vahlodia FRIES, Bot. Notiz. (1842).

Avenella PARLAT. Fl. It. I, 244 (1848).

Lerchenfeldia SCHUR. Transsylv. 753 (1866).

Monandraira EM. DESV. Gay, Fl. Chile VI, 341 (1845).

Airidium and **Rytidosperma** STEUD. Syn. Glum. I, 423, 425 (1855).

Peyritschia FOURN. Gram. Mex. 109 (1880).
Campella GRISEB. ex Dur. l. c. (1888).

Benth. and Hook., *Gen. Pl.* III, 1157; Durand, *Ind. Gen. Phan.* 472; Engler and Prantl, *Nat. Pflanz.* 2, II, 54 (Hackel).

Living species: 20; cosmopolitan; in tropical mts. Europe, 11; Russia, 7; N. America, 8; California, 5; Canada, 6–7; Rocky mts., 4; S. Sts., 1; E. Sts., 3.

Deschampsia caespitosa (LINN.) BEAUV. Agr. 91 (1812).
Aira caespitosa LINN. Spec. 64 (1753).
A. breviaristata GILIB. Exerc. Phyt. II, 528 (1792).
A. altissima MOENCH, Meth. 182 (1794).
Calamagrostis arundo ROTH. Tent. Germ. II, 88 (1789).
C. leersii KOEL. Gram. 107 (1802).
Aira ambigua MICHX. Fl. N. Am. I, 61 (1803).
Campella caespitosa LINK, Hort. Berol. I, 122 (1827).
Avena caespitosa GRIS. K. Schr. 52 (1836).
A. stolonifera HAUSM. Fl. Tir. 980 (1851–55).
A. wibeliana SCHUR. Oe. Bot. Zeit. IX, 326 (1859).
A. hartmanniana NYM. Consp. Fl. Eur. 807 (1882).

Wats. and Coult., Gray's Man. 6 ed. 652; Britt., Fl. N. J. 290; Mac Fl. Can. II, 209; Coult., Fl. Colo. 414; Wats, Fl. Calif. II, 297; Upham, Fl. Minn. 171; Richt., Pl. Eur. I, 56; Led., Fl. Ross. IV, 421; Engl. Hackel, Nat. Pflanz. II, 2, 54; Hook., Fl. Gt. Brit. 483; Trautv., Fl. Sib. 141.

Europe and Asia; cosmopolitan.

North America: Newf. and N. S. to Peace river valley and Alaska; S. to N. Eng., N. J. and W. across cont. to California.

Minn. valley: Forest district to Blue Earth Co.; rare; shores of streams and lakes.

HERB.: *Bailey 424,* Fall Lake.

AVENA LINN. Gen. 42 (1737).
Heuffelia SCHUR. Transsylv. 760 (1866).
Helicotrichum BESS. Reich., Fl. Germ. Exc. 140 b (1830).

Benth. and Hook., *Gen. Pl.* III, 1160; Durand, *Ind. Gen. Phan.* 472; Engler and Prantl, *Nat. Pflanz.* 2, II, 55 (Hackel).

Living species: 50; temperate regions, especially in the Old World. Europe, 39; Russia, 22; N. America, 2–3; Canada, 2; California, 1; E. Sts., 2; Rocky mts., 1; Pl. King, 2.

Avena striata MICHX. Fl. N. Am. I, 73 (1803).
Trisetum purpurascens TORR. Fl. U. S. I, 127 (1824).

Wats. and Coult., Gray's Man. 6 ed. 673; Britt., Fl. N. J. 291; Mac., Fl. Can. II, 213; Coult., Fl. Colo. 415; Upham, Fl. Minn. 171.

North America: N. S., N. Br., Q., Ont., Man., Brit. Col. and Rocky mts.; S. to N. Eng., N. Y. and N. J.; W. to Minn. and Colo.

Minn. valley: Forest district; W. to New Ulm and Cottonwood valley; hillsides and riverbanks.

HERB.: *Sandberg 595*, Washington Co.

DANTHONIA DC. Fl. Fr. III, 32 (1805) p. p.

Streblochaeta HOCHST. Pl. Schimp. Abyss. n. 412 (1835?).
Pentameris BEAUV. Agrostogr. 92 (1812).
Triraphis NEES, Pl. Afr. Austr. Glum. 270 (1841).
Chaetobromus NEES, Lindl., Ind. Nat. Syst. ed. 2, 449 (1835).
Monachather STEUD. Syn. Glum. I, 247 (1855).
Plinthanthesis STEUD. l. c. I, 14 (1855).
Crinipes HOCHST. Flora, 279 (1855).

Benth. and Hook., *Gen. Pl.* III. 1162; Durand, *Ind. Gen. Phan.* 473; Engler and Prantl, *Nat. Pflanz.* 2, II, 56 (Hackel).

Living species: 100; temperate and warmer regions; more than half are in S. Africa. Europe, 1; N. America, 5–6; California, 2–3; Pac. coast, 1 end. sp.; Canada, 4–5; Rocky mts., 2–3; S. Sts., 3; E. Sts., 3.

Danthonia spicata (LINN.) BEAUV. Agr. 55 (1812).

Avena spicata LINN. Spec. 119 (1753).
A. glumacea MICHX. Fl. N. Am. I, (1803).

Wats. and Coult., Gray's Man. 6 ed. 654; Britt., Fl. N. J. 291; Mac., Fl. Can. II, 214; Upham, Fl. Minn. 170; Chap., Fl. So. St. 569; Roth., Wheel. Exp. 293; Cov., Fl. Ark. 235.

North America: Atl. to Pac. in Can.; N. to N. S., Peace river and Vancouver; S. to N. Eng., N. J. and Fla.: W. to Minn., Mo. and Ark.

Minn, valley: Reported from S. central and S. W. districts; rare or local; dry or sandy or gravelly places.

SPARTINA SCHREB. Gen. Pl. 43 (1789).

Trachynotia MICHX. Fl. Bor. Am. I, 63 (1803).
Limnetis PERS. Syn. I, 72 (1805).
Ponceletia THOU. Fl. Trist. d'Achun. 36 (1806).
Solenache STEUD. Syn. Glum. I, 12 (1855).

Benth. and Hook., *Gen. Pl.* III, 1108; Durand, *Ind. Gen. Phan.* 473; Engler and Prantl, *Nat. Pflanz.* 2, II, 58 (Hackel).

Living species: 7; saline localities; 3, Atl. coast regions; prairies of N. America, 2; Montevideo, 1; Tristan d'Achuna, Amsterdam, Isl. St. Paul, 1. Europe, 1 (Mediterranean region); N. America, 6; Canada, 6; California, 2–3; S. Sts., 4; Rocky mts., 2; E. Sts., 4–5; Pl. King., 1; Pl. Wheel., 1.

Spartina cynosuroides (LINN.) WILLD. Enum. I, 80 (1809).

Dactylis cynosuroides LINN. Spec. 71 (1753).
Trachynotia cynosuroides and *polystachya* MICHX. Fl. N. Am. I, 64 (1803).

Limnetis cynosuroides and *polystachya* PERS. Syn. I, 72 (1805).
Spartina polystachya MUHL. Gram. 53 (1817).

Wats. and Coult., Gray's Man. 6 ed. 627; Britt., Fl. N. J. 283; Upham, Fl. Minn. 164; Coult., Fl. Colo. 405; Mac., Fl. Can. II, 182; Webb., Fl. Neb. 106; Wats., Fl. Calif. II, 290; Cov., Fl. Ark. 233.

North America: N. S., Q., Ont., Man. to Saskatchewan, Assiniboia and Little Slave lake; S. to N. J. and W. to Neb., Ark., Ind. Terr., Colo. and California.

Minn. valley: Throughout; abundant; banks of streams, moist prairies and low meadows.

HERB.: *Ballard 531*, Cleary's Lake, Scott Co.; *Ballard 786*, Swan Lake, Carver Co.; *Ballard 649*, Chaska; *Sheldon 1538*, Lake Benton; *Taylor 1000*, Glenwood; *Sheldon 741*, Sleepy Eye; *MacM.* and *Sheld, 10*, Brainerd; *Sandberg 565*, Red Wing; *Foote 5*, Worthington; *Oestlund 327*, Hennepin Co.; *Herb. Sheld. 1653*, Minneapolis.

SCHEDONNARDUS STEUD. Syn. Glum. I, 146 (1855).

Benth. and Hook., *Gen. Pl.* III, 1167; Durand, *Ind. Gen. Phan.* 473; Engler and Prantl, Nat. Pflanz. 2, II, 59.

Living species: 1; North America.

Schedonnardus paniculatus (NUTT.) COV. Fl. Ark. 236 (1891).

Lepturus paniculatus NUTT. Gen. I, 81 (1818).
Rottboellia paniculata SPRENG. Syst. II, (1825).
Schedonnardus texanus STEUD. Syn. Glum. I, 146 (1855).

Wats. and Coult., Gray's Man. 6 ed. 655; Webb., Fl. Neb. 103; Upham, Fl. Minn. 169; Wats., Fl. Calif. II, 322; Coult., Fl. Colo. 416; Mac., Fl. Can. II, 215; Engl. Hackel, Nat. Pflanz. II, 2, 69; Roth., Wheel. Exp. 293.

North America: Assiniboia, Man., Minn. to Ill., Mont., Neb., Colo., Calif., Ark,, N. Mex. and Tex.

Minn. valley: Reported from S. W. edge; rare and doubtful; high plains and sterile ridges.

HERB.: *Leiberg 101*, Rock Co., state line.

BOUTELOUA LAGASC. Var. Cienc. y. Litt. 141 (1805).

Eutriana TRIN. Fund. Agr. 161 (1820).
Actinochloa WILLD. R. and S. Syst. II, 22, 417 (1817).
Chondrosium DESVX. Bull. Philom. II, 188 (1813).
Atheropogon MUHL. Willd. Spec. IV. 937 (1805).
Dinebra D C. Cat. Hort. Monsp. 104 (1813) p. p.
Heterosteca DESVX. Bull. Philom. II. 188 (1813).
Aristidium ENDL. Gen. 94 (1836).
Triathera DESVX. l. c. (1813).
Triaena H B K. Nov. Gen. et Spec. I, 178 (1815).
Polyodon H B K. l. c. I, 174 (1815).
Triplathera ENDL. Gen. 94 (1833).
? **Corethrum** VAHL, Sk. Kiobenh. VI, 85 (1810).

Benth. and Hook., *Gen. Pl.* III, 1168: Durand, *Ind. Gen. Phan.* 473; Engler and Prantl, *Nat. Pflanz.* 2, II, 59 (Hackel).

Living species: 30; plateaus of S. W. United States; a few generally distributed in North America and in S. America. Rocky mts., 5; California, 3–4; Canada, 3; E. Sts., 3; S. Sts., 2; Pl. Wheel., 8; Tex., Mex. and Arizona, 23.

Bouteloua curtipendula (MICHX.) GRAY, Man. ed. v. 621 (1868).

Chloris curtipendula MICHX. Fl. N. Am. I, 159 (1803).
Atheropogon apludioides MUHL. Willd. Spec. IV, 927 (1805).
Bouteloua racemosa LAG. Varied. de Cienc. (1805).
Cynosurus secundus PURSH, Fl. Am. 728 (1814).
Eutriana curtipendula TRIN. Diss. I, 243 (1828).

Wats. and Coult., Gray's Man. 6 ed. 656; Britt., Fl. N. J. 292; Webb., Fl. Neb. 103; Mac., Fl. Can. II, 216; Coult., Fl. Colo. 417; Upham, Fl. Minn 164; Vas., Ag. Grasses U. S. 57; Engl., Hackel, Nat. Pflanz. 2, II, 59; Roth., Wheel. Exp. 286; Cov., Fl. Ark. 236.

Peru.

North America: Ont. to Man.; S. to Mex. and C. Amer.; W. to Colo. and Arizona; E. to Minn , Neb., Ark., Ill., Wisc., N. Y. and N. J.

Minn. valley: Throughout; especially prairie districts; dry prairies and ridges.

HERB.: *Sheldon 823*, Cottonwood valley, near Sleepy Eye; *Sheldon 1129*, Springfield; *Sheldon 1376*, Lake Benton; *Sheldon 1173*, New Ulm; *Taylor 735*, Glenwood; *Sheldon 957*, Redwood Falls; *MacM.* and *Sheld. 12*, Brainerd; *Foote 6*, Worthington; *Oestlund 328*, Minneapolis; *Oestlund 329*, Minneapolis; *Sandberg 567*, Goodhue Co.; *Herb. Sheld. 1707*, Minneapolis.

Bouteloua hirsuta LAG. Var. Cienc. y. Litt. (1805).

Chondrosium hirtum H B K. N. Gen. et. Spec. (1815)
Atheropogon papillosus ENGELM. Am. Jour. Sci. XLVI (1843).
Chondrosium foenum TORR. Marcy Rep. 157 (1848).
Bouteloua foena TORR.

Wats. and Coult., Gray's Man. 6 ed. 656; Upham, Fl. Minn. 164; Webb., Fl. Neb. 103; Mac., Fl. Can. II, 215; Coult., Fl. Colo. 416; Roth., Wheel. Exp. 32, 288.

North America: Alberta to Colo. and Mex.; E. to Tex., Neb., Ill, and Minn.

Minn. valley: Throughout; dry or sandy fields and ridges.

HERB.: *Sheldon 1167*, New Ulm; *Sheldon 1444*, Pipestone; *Taylor 736*, Glenwood; *Sheldon 1341*, Lake Benton; *Sheldon 1380*, Norwegian creek, Lincoln Co.; *Sheldon 1654*, Minneapolis; *MacM.* and *Sheld. 21*, Brainerd; *Ballard 24a*, Zumbrota; *Leiberg 93*, Blue Earth Co.; *Sandberg 566*, Cannon Falls.

Bouteloua oligostachya (NUTT.) TORR. Gray's Man. ed. v. 621 (1868).

Atheropogon oligostachyum NUTT. Gen. I, 78 (1818).
Chondrosium oligostachyum TORR. Marcy's Rep. 300 (1853).
Eutriania oligostachyum KUNTH, Enum. I, (1833).

Wats. and Coult., Gray's Man. 6 ed. 656; Upham, Fl. Minn. 164; Webb., Fl. Neb. 103; Mac., Fl. Can. II, 216; Coult., Fl. Colo. 416; Wats., Fl. Calif. II, 291; Vas., Ag. Grasses U. S, 57; Roth., Wheel. Exp. 32, 288; Cov., Fl. Ark. 236.

North America: Man.. Saskatchewan, Assiniboia and Rocky mts.; S. to Tex. and Mex.; W. to S. Calif.; E. to Wisc. and Iowa.

Minn. valley: S. central district and S. W.; plains and high meadows.

HERB.: *Leiberg 92*, Blue Earth Co.

BECKMANNIA HOST. Gram. Austr. III, 5 (1805).

Bruchmannia NUTT. Gen. I, 48 (1818).
Joachimea TEN. ex Kunth, Enum. I (1833).

Benth. and Hook., *Gen. Pl.* III, 1099; Durand, *Ind. Gen. Phan.* 474; Engler and Prantl, *Nat. Pflanz.* 2, II, 60 (Hackel).

Living species: 1; E. and S. E. Europe; temperate Asia and N. America.

Beckmannia erucaeformis (LINN.) HOST. Gram. III, 5 (1805).

Phalaris erucaeformis LINN. Spec. 55 (1753).
Cynosurus erucaeformis AIT. Hort. Kew. I, 105 (1789).
Paspalum aristatum MOENCH, Meth. 196 (1794).
Beckmannia erucoides BEAUV. Agr. 13 (1812).
Bruchmannia erucaeformis NUTT. Gen. I, 48 (1818).
? *Beckmannia erucaeformis* var. *uniflora* SCRIBN.

Wats. and Coult., Gray's Man. 6 ed. 628; Webb., Fl. Neb. 107; Upham, Fl. Minn. 171; Mac., Fl. Can. II, 176; Wats., Fl. Calif. II, 264; Coult., Fl. Colo. 403; Vas., Agr. Grasses U. S. 24; Engl. Hackel, Nat. Pflanz. II, 2, 60; Led., Fl. Ross. II, 453; Richt., Pl. Eur. I, 67; Trautv., Fl. Sib. 144; Wats., King Exp. 393; Roth., Wheel. Exp. 295.

S. Europe and the Orient to Caucasus, Siberia and Dahuria.

North America: Iowa, Minn., Neb., Dak. to Calif., Oregon, Wash., Brit. Col.; N. to L. Misstassini, Man.

Minn. valley: S. W. and W. districts; near edges of ponds; local or rare.

HERB.: *Sheldon 1260*, Lake Benton; *MacM. and Sheld. 8*, Brainerd; *Leiberg 102*, Pipestone quarry; *MacM. 21*, Morton.

BULBILIS RAF. Am. Mo. Mag. (1819).

Sesleria NUTT. Gen. I, 64 (1818) not Linn.
Calanthera NUTT. MSS. ex B. and H. l. c. (1883) not Kunth.
Buchloe ENGELM. Trans. St. L. Acad. 432 (1859).

Benth. and Hook., *Gen. Pl.* III, 1173; Durand, *Ind. Gen. Phan.* 474; Engler and Prantl, *Nat. Pflanz.* 2, II, 61 (Hackel); O. Kuntze, *Rev. Gen.* II, 763.

Living species: 1; N. America.

Bulbilis dactyloides (NUTT.) RAF. Am. Mo. Mag. (1819).

Sesleria dactyloides NUTT. Gen. I, 65 (1818).
Calanthera dactyloides KUNTH (?), Journ. Bot. VIII, 18 (1856?).
Antephora axilliflora STEUD. Glum. I, 111 (1855).
Buchloë dactyloides ENGELM. Trans. Acad. St. Louis I (1859).

Wats. and Coult., Gray's Man. 6 ed. 657; Upham, Fl. Minn. 165; Coult., Fl. Colo. 417; Upham, Fl. Minn. 165; Vas., Ag. Grasses U. S. 59; Engl. Hackel, Nat. Pflanz. II, 2, 61; Roth., Wheel. Exp. 288.

North America: Saskatchewan to Minn., Iowa, Kan., Tex. and N. Mex.; W. to Dak., Colo., Arizona.

Minn. valley: Reported from S. W. edge; infrequent or exterminated; dry plains.

HERB.: *Leiberg 94,* Pipestone quarry.

PHRAGMITES TRIN. Fund. Agr. 134 (1820) p. p.

Arundo BEAUV. Agrostogr. 60 (1812).
Czernya PRESL, Cyp. et Gram. Sic. 22 (1820).
Trichoon ROTH, Roem. Arch. I, 3, 37 (1798).

Benth. and Hook., *Gen. Pl.* III, 1179; Durand, *Ind. Gen. Phan.* 475; Engler and Prantl, *Nat. Pflanz.* 2, II, 68 (Hackel); Schenck, *Palaeophyt.* 385.

Living species: 3; 1 cosmopolitan; 1 tropical Asia; 1 Argentine Republic.

Fossil species: 1, cretaceous, N. America (*Lesquereaux*); 1 tertiary, Hungary (*Stur.*); 1 tertiary, Europe, America, polar regions (*A. Br.*).

Phragmites phragmites (LINN.).

Arundo phragmites LINN. Spec. 81 (1753).
A. vulgaris LAM. Fl. Fr. III, 615 (1778).
A. vulnerans GILIB. Exerc. Phyt. II, 541 (1792).
Phragmites communis TRIN. Fund. Agr. 154 (1820).
Czernia arundinacea PR. Gram. 22 (1820).
Arundo graeca LINK, Linn. IX, 136 (1834).
Phragmites graecus STEUD. Nom. ed. 2, II, 324 (1841).
Arundo aggerum KIT. Linn. XXXII, 309 (1863).
Phragmites vulgaris B. S. P. Cat. N. Y. (1888).

Wats. and Coult., Gray's Man. 6 ed. 658; Mac., Fl. Can. II, 216; Britt., Fl. N. J. 293; Webb., Fl. Neb. 102; Vas., Ag. Grasses U. S. 60; Coult., Fl. Colo. 418; Wats., Fl. Calif. II, 300; Chap., Fl. So. St. 567; Richt., Pi. Eur. I, 71; Engl. Hackel, Nat. Pflanz. II, 2, 68; Nym., Fl. Eur., Led., Fl. Ross.

IV, 392; Hook., Fl. Gt. Brit. 487; Miyabe, Fl. Kur. 270; Wats., King Exp. 390; Roth., Wheel. Exp. 293; Cov., Fl. Ark. 236; Hart., Fl. Scand. I, 514; Upham, Fl. Minn. 168.

Europe and Asia; cosmopolitan.

North America: N. S. to Winnipeg, Athabasca, Brit. Col. and Pac. coast; S. to Fla. and Mex.; W. to S. Cal.

Minn. valley: Throughout; especially prairie districts; edges of streams and ponds.

HERB.: *Ballard 783,* Swan Lake, Carver Co.; *Sheldon 1053,* Sleepy Eye; *MacM. and Sheld. 3,* Brainerd.

ERAGROSTIS BEAUV. Agrostogr. 70 (1812).

Macroblepharos PHILIPPI, Linn. XXIX, 100 (1855).
Harpachne HOCHST. A. Rich., Fl. Abyssin. II, 431 (1851).
Coelachyrum NEES, Linn. XVI, 221 (1842).
Megastachya BEAUV. Agrostogr. 74 (1812).
Cladoraphis FRANCH. ex Dur. l. c. (1888).

Benth. and Hook., *Gen. Pl.* III, 1186, Durand, *Ind. Gen. Phan.* 476; Engler and Prantl, *Nat. Pflanz.* 2, II, 69 (Hackel).

Living species: 100; cosmopolitan; principally in the tropics. Europe, 5; Russia, 4; N. America, 10–12; S. Sts., 10–11; E. Sts., 7; Canada, 1; California, 3–4; Rocky mts. 1; Pl. King, 2; Pl. Wheel., 3.

Eragrostis pectinacea (MICHX.) GRAY, Man. ed. V, 632 (1868).

Poa pectinacea MICHX. Fl. N. A. (1803).
P. spectabilis PURSH, Fl. Am. (1814).
Eragrostis spectabilis GRAY, Man. ed. I, 598 (1848).
E. pectinacea var. *spectabilis* GRAY l. c.
Poa hirsuta AUCT. AMER.

Wats. and Coult., Gray's Man. 6 ed. 661; Britt., Fl. N. J. 294; Webb., Fl. Neb. 102; Upham, Fl. Minn. 168; Chap., Fl. So. St. 564; Cov., Fl. Ark. 237.

North America: Mass. to N. J. and Fla.; W. to Minn., Neb. and Ark.

Minn. valley: Forest district; infrequent; sandy and barren places.

HERB.: *Ballard 638,* Chaska; *Sandberg 582,* Red Wing; *Oestlund 332,* Minneapolis.

Eragrostis purshii SCHRAD. Linn. XII, 45 (1838).

Poa tenella PURSH, Fl. Am. (1814).
P. caroliniana SPRENG. Mant. I, 33 (1828).
P. pectinacea AUCT. AMER. not of MICHX.

Wats. and Coult., Gray's Man. 6 ed. 661; Britt., Fl. N. J. 294; Webb., Fl. Neb. 102; Mac., Fl. Can. II, 219; Coult., Fl. Colo. 419; Chap., Fl. So. St. 563; Upham, Fl. Minn. 167; Wats., King Exp. 388; Roth., Wheel. Exp. 291?; Cov., Fl. Ark. 237.

North America: Ont., Penn. and N. J. to N. Car.; W. to Minn., Dak., Neb., Colo , Nev., Ark. and N. Mex.

Minn. valley: Throughout; sandy places and banks of streams.

HERB.: *Ballard 853*, Page Lake, Carver Co.; *Leiberg 97*, Blue Earth Co.; *Sandberg 580*, Red Wing; *Sandberg 581*, Red Wing; *Leiberg 98*, Pipestone Quarry.

Eragrostis eragrostis (LINN.).

Briza eragrostis LINN. Spec. 70 (1753).
Poa multiflora FORSK. Descr. 21 (1775).
P. cilianensis ALL. Fl. Ped. II, 246 (1785).
Briza oblonga MOENCH, Meth. 185 (1794).
Poa megastachya KOEL. Gram. 181 (1802).
P eragrostis SM Prodr. I, 54 (1806).
Eragrostis major HOST. Gram. IV. 14 (1809).
Megastachya eragrostis BEAUV. Agr. 74 (1812).
Eragrostis megastachya LINK, Hort. Berol. I, 187 (1827).
E vulgaris var. *megastachya* Coss. and GERM. Fl. Par. II, 641 (1845).
Poa oblonga BMG. Enum. III, 238 (1846).
Eragrostis poaeoides var. *megastachya* GRAY, Man. ed. V. 631 (1868).
E. multiflora ASCH. Cat. Serb. 10 (1877).

Wats. and Coult., Gray's Man. 6 ed. 660; Britt., Fl. N. J. 293; Mac., Fl. Can. II, 219; Webb., Fl. Neb. 101; Chap., Fl. So. St. 563; Upham, Fl Minn, 167; Wats., Fl. Calif. II, 315; Vas., Ag. Grasses U. S. 61; Led., Fl. Ross. IV. 382: Richt., Pl. Eur. I, 73; Nym., Fl. Eur.: Wats., King Exp. 388; Roth., Wheel. Exp. 291; Cov., Fl. Ark. 237.

Middle Europe; S. Asia; Africa; cosmopolitan.

North America: Ont. to N. Eng., N. J. and Fla.; W. to Man., Minn., Neb., Ark.; also, Pac. coast to Oregon.

Minn. valley: Throughout; riverbanks, lake shores, roadsides and railway embankments.

HERB.: *Ballard 839*, Page Lake, Carver Co.; *Sheldon 895*, Sleepy Eye; *Sandberg 579*, Cannon Falls; *Oestlund 334*, Hennepin Co.

Eragrostis hypnoides (LAM.) B. S. P. Cat. N. Y. (1888).

Poa hypnoides LAM. Ill. I, 185 (1791).
P. reptans MICHX. Fl. N. A. I. 69 (1803 .
Megastachya reptans BEAUV. Agr. 74 (1812).
Eragrostis reptans NEES, Mart. Fl. Braz. I, 514 (1829).

Wats. and Coult., Gray's Man. 6 ed. 660; Upham, Fl. Minn. 167; Britt., Fl. N. J. 293; Webb., Fl. Neb. 102; Chap., Fl. So. St. 563; Mac., Fl. Can. II, 219; Wats., Fl. Calif. II, 314; Gris., Fl. W. I.; Cov., Fl. Ark. 237.

Trinidad to Buenos Ayres.

North America: Ont. to N. Eng., N. J., Fla.; W. to Man., Minn., Neb., Mo. and Ark.

Minn. valley: Throughout; frequent; riverbanks and lake shores.

Herb.: *Sheldon 1207,* New Ulm; *Sheldon 1089,* Springfield; *Ballard 484,* Prior's Lake, Scott Co.; *Sandberg 578,* Goodhue Co.

EATONIA Raf. Journ. Phys. LXXXIX. 104 (1819).

Reboulea Kunth, Rev. Gram. 341 (1835).

Colobanthus Trin. Mem. Acad. Petr. 6, II, 66 (1845).

Benth. and Hook., *Gen. Pl.* III. 1184; Engler and Prantl, *Nat. Pflanz.* 2, II, 70 (Hackel ; Durand, *Ind. Gen. Phan.* 476.

Living species: 3; N. America. E. Sts., 3; Canada, 2; Rocky mts., 1; California, 1; S. Sts., 3; Pl. Wheel., 1; Pl. King., 1.

Eatonia obtusata (Michx.) Gray, Man. ed. V. 626 (1868).

Aira obtusata Michx. Fl. N. Am. I, 62 (1803).

A. truncata Muhl. Gram. 83 (1817).

?*Reboulea gracilis* Kunth, Enum. (1833).

Koeleria truncata Torr. Fl. N. Y. II, 469 (1843).

Reboulea obtusata Gray, Man. ed. I, 591 (1848).

Wats. and Coult., Gray's Man. 6 ed. 659; Britt., Fl. N. J. 293; Webb., Fl. Neb. 102; Mac., Fl. Can. II, 218, 394; Coult., Fl. Colo. 419; Wats. Fl. Calif. II, 302; Chap., Fl. So. St. 560; Upham, Fl. Minn. 166; Engl., Hackel, Nat. Pflanz. II, 2, 70; Wats., King Exp. 383; Roth., Wheel. Exp. 289; Cov., Fl. Ark. 236.

North America: N. Penn. and N. J. to Fla.; W. to Lake Huron, Minn., Saskatchewan, Oregon and Arizona. S. to Ark. and N. Mex..

Minn. valley: Forest district and S. W.; dry soil and openings in forest.

Herb.: *Sheldon 867,* Sleepy Eye; *Leiberg 96,* Rock Co.

Eatonia pennsylvanica (DC.) Gray, Man. ed. V, 626 (1868).

Koeleria (?) *pennsylvanica* DC. Cat. Monsp. (1813).

Aira mollis Muhl. Gram. 81 (1817).

A. triflora Ell. Sk. I, 154 (1821).

?*Reboulea gracilis* Kunth, Enum. (1833).

R. pennsylvanica Gray, Man. ed. I, 591 (1848).

Wats. and Coult., Gray's Man. 6 ed. 660; Britt., Fl. N. J. 293; Mac., Fl. Can. II, 218; Webb., Fl. Neb. 102; Upham, Fl. Minn. 166; Chap., Fl. So. St. 560; Engl., Hackel, Nat. Pflanz. II, 2, 70; Mac., Fl. Can. II, 2, 394; Cov., Fl. Ark. 236.

North America: N. Br. to Carolinas; W. to Man., Hudson Bay, Brit Col. and Rocky mts.; S. to Neb., Nev., Ark. and Tenn.

Minn. valley: Forest district and S. W.; meadows and open, damp woodland.

HERB.: *Taylor 658*, Cobb river, Blue Earth Co.; *Bailey 32*, Vermilion lake.

KOELERIA PERS. Syn. I, 97 (1805).
Collinaria EHRH. Beitr IV 147 (1789).
Airochloa LINK, Hort. Berol. I, 126 (1827).
Lophochloa REICH. Fl. Germ. Exc. 42 (1830).
Ægialitis TRIN. Fund. Agr. 127 (1820).
Ægialina SCHULTES, Syst. Mant. II, 13, 222 (1824).
Wilhelmsia C. KOCH, Linn. XXI, 400 (1847).

Benth. and Hook., *Gen. Pl.* III, 1183; Durand, *Ind. Gen. Phan.* 476; Engler and Prantl, *Nat. Pflanz.* 2, II, 70 (Hackel).

Living species: 15; Europe, temp. Asia, N. Africa—1 of these, N. America, S. America and S. Africa. Principally in Europe; Europe, 16 (*Richter*); Russia, 4; 1 Patagonia, Sandwich Isls.; N. America, 1.

Koeleria cristata (LINN.) PERS. Syn. I, 97 (1805).
Aira cristata LINN. Spec. 63 (1753).
Festuca cristata VILL. Dauph. II, 93 (1787).
Poa pyramidata LAM. Ill. I, 183 (1791).
P. cristata WILLD. Spec. I, 402 (1797).
Melica gmelini ROTH. Tent. Germ. II, 104 (1797).
M. hirsuta KOEL. Gram. 144 (1802).
Dactylis cristata M. B. Fl. T. 1, 67 (1809).
Koeleria nitida NUTT. Gen. I, 74 (1818).
Koeleria arenaria DUM. Agr. 115 (1823).
K. parviflora BERT. Schultes Mant. II, 344 (1824).
Airochloa cristata LINK, Hort. Berol. I, 435 (1827).

Wats. and Coult., Gray's Man. 6 ed. 659; Upham, Fl. Minn. 166; Wats., Fl. Calif. II, 301; Coult., Fl. Colo. 418; Webb., Fl. Neb. 102; Vas., Agr. Grasses U. S. 60; Engl., Hackel, Nat. Pflanz. II, 2, 70; Richt., Pl. Eur. I, 74; Led., Fl. Ross. IV, 401; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 488; Trautv., Fl. Sib. 138; Wats., King Exp. 383; Cov., Fl. Ark. 236; Roth., Wheel. Exp. 288; Hart., Fl. Scand. I, 506.

All Europe; middle Russia to Caucasus mts. and Dahuria.

North America: Penn. to Ill., Neb., Kan., Ark.; N. W. to Dak., Minn., Saskatchewan, Athabasca; W. to Vancouver, Oregon and Calif.; R. mt. region.

Minn. valley: Throughout; abundant; dry hillsides, railway embankments and roadsides or meadows.

HERB.: *Sheldon 756*, Sleepy Eye; *Taylor 656*, Cobb river, Blue Earth Co.; *Taylor 353*, Janesville; *Taylor 174*, Janesville; *Ballard 96*, Shakopee; *Ballard 254*, Jordan, Scott Co.; *Ballard 184*, Jordan, Scott Co.; *MacM.* and *Sheld. 57*, Brainerd; *Sandberg 568*, Red Wing; *Herb. Sheld. 1758*, Minneapolis; *Sheldon 1382*, Lake Benton.

POA LINN. Gen. 55 (1737).

Leucopoa GRISEB. Led., Fl. Ross. IV, 383 (1853).
Poidium NEES, Lindl. Introd. Nat. Syst. ed. 2, 450 (1835).

Benth. and Hook., *Gen. Pl.* III, 1196; Durand, *Ind. Gen. Phan.* 478; Engler and Prantl, *Nat. Pflanz.* 2, II, 73 (Hackel).

Living species: 100; cosmopolitan; tropical mts. Europe, 41; Russia, 25; N. America, 40; Canada, 29; Pl. King, 11; Pl. Wheel., 10; Rocky mts., 12; E. Sts., 10; S. Sts , 8; Calif., 10–11.

Poa nemoralis LINN. Spec. 69 (1753).

Festuca airoides LAM. Enc. Meth. II, 464 (1786).
Poa cinerea VILL. Dauph. II, 156 (1787).
P. debilis THUILL. Fl. Par. 43 (1790).
P. nutans GILIB. Exerc. Phyt. II, 532 (1792).
P. juncea SUT. Fl. Helv. I, 46 (1802).
P. glaucantha GAUD. Alp. III, 36 (1808).
P. gracilescens SCHRAD. Hort. Gött. I (1809).
P. glauca BAST. Ess. 39 (1809).
Aira elodes BRIGN. Fl. For. 10 (1810).
Poa palustris DC. Fl. Fr. VI, 272 (1815).
Catabrosa elodes R. and S. Syst. II, 696 (1817).
Poa firmula GAUD. Fl. Helv. I, 239 (1828).
P. caesia AUCT. AMER., not Sm.
P. caesia var. *strictior* GRAY, Man. ed. V, 628 (1868).

Wats. and Coult., Gray's Man. 6 ed. 664; Upham, Fl. Minn. 167; Mac., Fl. Can. II, 223, 225: Webb., Fl. Neb. 101; Coult., Fl. Colo. 421; Richt., Pl. Eur. I, 85; Led., Fl. Ross. IV, 374; Hook., Fl. Gt. Brit. 492; Nym., Fl. Eur.; Wats., King Exp. 386; Cov., Fl. Ark. 237; Hart., Fl. Scand. I, 498; Rothr., Alask. 458.

Arctic and Northern Europe to Mediterranean; Siberia to Himalayas.

North America: Greenland, Labrador, N. S. to Saskatchewan, N. W. T., Brit. Col. and Rockies; S. to Maine and Vt.; W. to Minn., Neb. and Colo. Ark. ? Alaska.

Minn. valley: Forest district; dry and open places; infrequent.

HERB.: *Bailey 469*, Agate Bay; *Bailey 434*, Basswood Lake; *Sandberg 575*, Red Wing; *Sandberg 576*, Red Wing.

Poa palustris LINN. Syst. 874 (1759).

P. serotina EHRH. Beitr. VI, 86 (1791).
P riparia WOLF. Hoffm., Fl. Dan. 42 (1791).
P. triflora GILIB. Exerc. Phyt. II, 531 (1792).
P fertilis HOST. Gram. III, 10 (1805).
P. hydrophila PERS. Syn. I, 89 (1805).
P. angustifolia WAHL. Fl. Ups. 66 (1820).
P. exigua DUM. Belg. Agr. 113 (1823).
? *P. crocata* MICHX. Fl. N. Amer. I, 68 (1803).

? *P. effusa* KIT. Schultes, Ost. Fl. ed. 2, I, 227 (1814).
P. nemoralis PURSH, Fl. Am. (1814).

Wats. and Coult., Gray's Man. 6 ed. 665; Britt., Fl. N. J. 295: Webb., Fl. Neb. 101; Upham, Fl. Minn. 167; Mac., Fl. Can. II, 226: Coult., Fl. Colo. 442; Wats., Fl. Calif. II, 313; Vas., Ag. Grasses U. S. 67; Led., Fl. Ross. II, 375; Richt., Pl. Eur. I, 87; Wats., King Exp. 386; Roth., Wheel. Exp. 290.

Mid. and S. Europe; N. Africa; Asia Minor to Siberia and the Himalayas.

North America: N. S., Q., Ont. to N. J.; W. to Mich., Wisc., Minn., Man., Neb., Saskatchewan, Colo., Rocky mts. and Washington; N. to Vancouver and Athabasca.

Minn. valley: Throughout; meadows and edges of marshes and along streams.

HERB.: *Ballard 328*, Belle Plaine; *Ballard 325*, Belle Plaine; *Taylor 227*, Janesville; *Bailey 510*, Agate Bay; *Sandberg 577*, Red Wing; *Juni 25*, Agate Bay.

Poa compressa LINN. Spec. 69 (1753).
P. muralis WIBB. Fl. Werth. 114 (1799).
P. anceps PR. Cyp. and Gram. 43 (1820).
P. planiculmis PR. Add. (1820).
P. polynoda and *subcompressa* PARN. Brit. Gras. 84 (1845).
P. complanata SCHUR. Enum. 770 (1866).

Wats. and Coult., Gray's Man. 6 ed. 664; Brit., Fl. N. J. 295; Mac., Fl. Can. II, 224; Coult., Fl. Colo. 421; Vas., Ag. Grasses U. S. 65; Webb., Fl. Neb. 101; Upham, Fl. Minn. 167; Chap., Fl. So. St. 563: Led., Fl. Ross. IV, 371; Richt., Pl. Eur. I, 88; Hook., Fl. Gt. Brit. 492; Nym., Fl. Eur.; Hart., Fl. Scand. I, 500.

Mid. and S. Europe; Siberia and Kamtk.

North America: Minn. to Neb. and Kan.; N. W. to Vancouver. Introd. E. and S.

Minn. valley: Forest district; infrequent; waste places.

HERB.: *Oestlund 331*, Minneapolis; *Oestlund 332*, Minneapolis; *Bailey 527*, Agate Bay.

SCOLOCHLOA LINK, Hort. Berol. I, 136 (1827).
Fluminia FRIES, Summ. Scand. Veg. 247 (1846).

Benth. and Hook., *Gen. Pl.* III, 1197 (*sub Graphephorum*): Durand, *Ind. Gen. Phan.* 478; Engler and Prantl, *Nat. Pflanz.* 2, II, 74 (Hackel).

Living species: 2; 1, N. temperate regions; 1, Saghalin.

Scolochloa arundinacea (LILJ.).
Festuca arundinacea LILJ. Sv. Fl. II, 47 (1792).
Arundo festucacea WILLD. Enum. I, 126 (1809).
Donax festucaceus BEAUV. Agr. 78 (1812).
Schenodorus arundinaceus R. and S. Syst. II, 700 (1817).

Donax borealis TRIN. Fund. Agrost. 156 (1820).
Festuca borealis M. K. Röhl., Dan. Fl. I, 664 (1823).
F. donacina WAHL. Fl. Suec. 64 (1824–26).
Scolochloa festucacea LINK, Hort. Berol. I, 137 (1827).
Triodia festucacea EICHW. Sk. 119 (1830).
Glyceria arundinacea FR. Nov. Mant. II, 8 (1832–42).
Fluminia arundinacea FR. Summ. I, 247 (1846–49).
Graphephorum festucaceum GRAY, Ann. Bot. Soc. Can. I, 57 (1861).
G. arundinaceum ASCH. Fl. Brand. 852 (1866).

Wats. and Coult., Gray's Man. 6 ed. 666; Mac., Fl. Can. II, 229; Upham, Fl. Minn. 165; Engl. Hackel, Nat. Pflanz. II, 2, 74; Richt., Pl. Eur. I, 89; Nym., Fl. Eur.; Led., Fl. Ross.; Hart., Fl. Scand. I, 505.

Northern Europe and Baikal Siberia.

North America: Lake of the Woods and Saskatchewan, throughout the prairie region and to the Peace river country; S. to Emmet Co., Iowa.

Minn. valley: W. and N. W. districts and S. edge; edges of lakes or streams.

HERB.: *Cratty 5*, Emmet Co., Iowa, state line.

PANICULARIA FABR. En. Pl. Helm. 373 (1763).
Glyceria R. BR. Prodr. 179 (1810).
Hydrochloa HARTM. Gram. Scand. 8 (1819).
Porroteranthe STEUD. Syn. Glum. I, 287 (1855).
Exydra ENDL. Fl. Posen. 119 (1830).

Benth. and Hook., *Gen. Pl.* III, 1197; Durand, *Ind. Gen. Phan.* 478; Engler and Prantl, *Nat. Pflanz.* 2, II, 74; O. Kuntze, *Rev. Gen.* II, 782.

Living species: 16; principally N. America; a few Europe and Asia; 1, Australia. Europe, 9–10; Russia, 6; North America, 15; Canada, 14; California, 3–4; Rocky mts, 4; Pl. Wheel., 4; E. Sts., 8; S. Sts., 4; Pl. King, 3.

Panicularia fluitans (LINN.) OK. Rev. Gen. II, 782 (1891).
Festuca fluitans LINN. Spec. 75 (1753).
Hydrochloa fluitans HOST. Gram. I, 141 (1801).
Poa fluitans KOEL. Gram. 204 (1802).
Glyceria fluitans R. BR. Prodr. I, 179 (1810).

Wats. and Coult., Gray's Man. 6 ed. 667; Britt., Fl. N. J. 296; Wats., Fl. Calif. II, 307; Vas., Agr. Grasses U. S. 70; Upham, Fl. Minn. 167; Chap., Fl. So. St. 561; Engl. Hackel, Nat. Pflanz. II, 2, 74; Richt., Pl. Eur. I, 90; Led., Fl. Ross. IV, 394; Hook., Fl. Gt. Brit. 494; Cov., Fl. Ark. 237; Hart., Fl. Scand. I, 501.

Cosmopolitan—Europe, Asia, Africa, Australia.

North America: N. Br., Q., Ont. to Saskatchewan, Brit. Col., Vancouver; S. to Oregon and Sierra Nevada; E. to Minn., Ark., Tenn. and Atl. coast.

Minn. valley: Forest district; shallow water of ponds or sluggish streams.

HERB.: *Bailey 20*, Vermilion Lake; *Sandberg 573*, Center City.

Panicularia americana (TORR.).

Poa aquatica var. *americana* TORR. Fl. U. S. I, 108 (1824).
Glyceria arundinacea KUNTH, Enum. I, 367 (1833).
G. aquatica HOOK. Fl. Bor.-Am. II, 248 (1840).
G. grandis WATS. in W. and C. Gray's Man. ed. VI, 667 (1890).
Panicularia aquatica OK. Rev. Gen. II, 782 (1891).

Wats. and Coult., Gray's Man. 6 ed. 667; Vas., Ag. Grasses U. S. 69; Upham, Fl. Minn. 166; Mac., Fl. Can. II, 230; Britt., Fl. N. J. 296; Webb., Fl. Neb. 101; Coult., Fl. Colo. 423: Upham, Fl. Minn. 167; Wats., King Exp. 384; Rothr., Alask. 458.

North America: N. Br., Q., Ont. to N. Eng., N. Y. and N. J.; W. to Minn., Iowa, Neb., Colo., California; N. to Saskatchewan, Brit. Col., Vancouver and Sitka, Alaska; S. to Arizona?

Minn. valley: Forest district and probably throughout; wet grounds and meadows along streams.

HERB.: *Sheldon 480*, Madison Lake, Blue Earth Co.; *Ballard 124*, Chaska, Carver Co.; *Ballard 317*, Belle Plaine; *Oestlund 330*, Minneapolis; *Oestlund 331*, Minneapolis; *Sandberg 572*, Red Wing; *Bailey 97*, Vermilion lake; *Bailey 263*, St. Louis river; *Ballard 250*, Jordan, Scott Co.; *Ballard 267*, Jordan, Scott Co.

Panicularia nervata (WILLD.) OK. Rev. Gen. II, 783 (1891).

Poa nervata WILLD. Spec. I, 389 (1797).
P. striata MICHX. Fl. N. Am. I, 69 (1803).
P. lineata PERS. Syn. I, 89 (1805).
P. parviflora PURSH, Fl. Am. I, 80 (1814).
Briza canadensis NUTT. Gen. I, 69 (1818).
Glyceria michauxii KUNTH, Enum. 367 (1833).
G. nervata TRIN. Act. Petrop. ser. 6, I, 365 (1836).

Wats. and Coult., Gray's Man. 6 ed. 667; Britt., Fl. N. J. 296; Mac., Fl. Can. II, 232: Vas., Ag. Grasses U. S. 70; Upham, Fl. Minn. 166; Webb., Fl. Neb. 101; Chap., Fl. So. St. 561; Wats., Fl. Calif. II, 307: Coult., Fl. Colo. 423; Richt., Pl. Eur. I, 90; Roth., Wheel. Exp. 289: Cov., Fl. Ark 237.

Introduced in France.

North America: N. S., N. Br., Q., Ont. to W. Fla.; W. to Athabasca, Peace river, Vancouver, Brit. Col., Oregon, Calif., Nev. and Arizona.

Minn. valley: Throughout; abundant; moist or marshy fields and meadows or wet places in open woodland.

HERB.: *Sheldon 558*, Rice lake, Waseca Co.; *Ballard 59*, Chaska; *Sheldon 955*, Redwood Falls; *Sheldon 455*, Duck lake, Blue Earth Co.; *Bailey 349*, Mud river; *Bailey 103*, Vermilion lake; *Sandberg 570*, Red Wing; *Sandberg 571*, Chisago Co.

Panicularia elongata (TORR.) OK. Rev. Gen. II, 783 (1891).
Poa elongata TORR. Fl. U. S. I, 112 (1824).
Glyceria elongata TRIN. Act. Petrop. ser. 6, I, 365 (1836).
Wats. and Coult., Gray's Man. 6 ed. 667; Britt., Fl. N. J. 296; Mac., Fl. Can. II, 231; Upham, Fl. Minn. 166.

North America: N. Br., Q. to N. Eng., N. J., Penn. and mts. of N. Car.; W. in U. S. to Mich. and Minn.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; rare; damp, marshy places in woods.

Panicularia canadensis (MICHX.) OK. Rev. Gen. II, 783 (1891).
Briza canadensis MICHX. Fl. N. Am. I, 71 (1803).
Poa canadensis BEAUV. Agrost. 155 (1812).
Megastachya canadensis R. and S. Syst. II, 593 (1817).
Glyceria canadensis TRIN. Act. Petrop. ser. 6, I, 366 (1836).
Wats. and Coult., Gray's Man. 6 ed. 667; Britt., Fl. N. J. 295; Upham, Fl. Minn. 166; Mac., Fl. Can. II, 230; Vas., Ag. Grasses U. S. 69.

North America: N. S., N. Br., Q., Ont. to Georgian Bay and L. Nipigon; S. to N. J. and Penn.; W. to Minn., Neb. and Kan.

Minn. valley: N. E. districts and N. edge; marshes and edges of lakes.

HERB.: *Sheldon 1630*, Taylors Falls; *MacM. and Sheld. 14*, Cass Co.; *Bailey 264*, St. Louis river; *Bailey 273*, St. Louis river; *Sandberg 569*, Chisago Co.

FESTUCA LINN. Gen. 41 (1737).
Vulpia GMEL. Fl. Bad. I, 8 (1805).
Mygalurus LINK, Hort. Berol. I, 92 (1827).
Loretia DUR. Jour. Rev. Sci. Nat. II, 2, 38 (1874).
Helleria FOURN. Gram. Mex. 128 (1880).
Schedonorus BEAUV. Agrostogr. 99 (1812).
Amphigenes JANKA, Linn. XXX, 619 (1856).
Catapodium LINK, Hort. Berol. I, 44 (1827).
Micropyrum and **Festucaria** LINK, Linn. XVII, 397–398 (1843).
Nardurus REICH. Godr. Fl. Lorr. ed. 2, II, 458 (1857).
Castellia TIN. Pl. Rar. Sic. 17 (1846).
Sclerochloa REICH. Ic. Fl. Germ. t. 58 (1834).
Scleropoa GRISEB. Spic. Rum. II, 431 (1845).
Benth. and Hook., *Gen. Pl.* III, 1198; Durand, *Ind. Gen. Phan.* 478; Engler and Prantl, *Nat. Pflanz.* 2, II, 74 (Hackel).

Living species: 85; 250 described; temperate and tropical (rarely) regions. 129 (Richter), Europe; N. America, 16; Canada, 14; California, 7–8; E. Sts., 3; S. Sts., 8–10; Rocky mts., 4–5; Pl. King, 4; Pl. Wheel., 4.

Festuca nutans WILLD. Enum. I, 116 (1809).

Poa nutans LINK, Hort. Berol. (1827).

Wats. and Coult., Gray's Man. 6 ed. 669; Webb., Fl. Neb. 100; Britt., Fl. N. J. 297; Mac., Fl. Can. II, 234; Chap., Fl. S. St. 565; Upham, Fl. Minn. 168; Cov., Fl. Ark. 238.

North America: N. S. to Ont., N. Eng., N. J. and Fla.; W. to Minn., Neb., Dak. and Mo.

Minn. valley: Forest district and N. W.; rather rare; woods and thickets, sterile soil.

HERB.: *Ballard 387,* Jordan, Scott Co.; *Ballard 528,* Cleary's lake, Scott Co.; *Ballard 130,* Chaska; *Sandberg 583,* Chisago Co.; *Ballard 222,* Jordan, Scott Co.

Festuca ovina LINN. Spec. 73 (1753).

Bromus ovinus SCOP. Fl. Carn. I, 77 (1772).

Festuca nigra GILIB. Exerc. Phyt. II, 533 (1792).

Wats. and Coult., Gray's Man. 6 ed. 669; Britt., Fl. N. J. 297; Mac., Fl. Can. II, 235; Wats., Fl. Calif. II, 317; Coult., Fl. Colo. 424; Webb., Fl. Neb. 100; Upham, Fl. Minn. 168; Engl. Hackel, Nat. Pflanz. II, 2, 75; Richt., Pl. Eur. I, 93; Nym., Fl. Eur.; Led., Fl. Ross. IV, 350; Hook., Fl. Gt. Brit. 497; Trautv., Fl. Sib. 134; Miyabe, Fl. Kur. 271; Wats., King Exp. 389; Roth., Wheel. Exp. 32, 291, 292; Hart., Fl. Scand. I, 491; Rothr., Alask. 458.

Cosmopolitan.

North America: N. S., Q., Ont., Man. to Saskatchewan, Bear Lake, 62° N. lat., Vancouver; S. to Fla., N. Mex. and Mexico.

Minn. valley: Forest district; frequent; fields and meadows.

HERB.: *Ballard 240,* Jordan, Scott Co.; *Ballard 282,* Jordan, Scott Co.; *Leiberg 99,* Blue Earth Co.; *Bailey 489,* Agate Bay; *Bailey 450,* Mud lake.

Festuca octoflora WALT. Fl. Car. 81 (1788).

F. bromoides MICHX. Fl. N. A. I, 66 (1803).

F. tenella WILLD. Enum. I, 113 (1809).

Schoenodorus tenellus R. and S. Syst. II, 727 (1817).

Wats. and Coult., Gray's Man. 6 ed. 669; Mac., Fl. Can. II, 237; Wats., Fl. Calif. II, 317; Britt., Fl. N. J. 296; Chap., Fl. S. St. 565; Webb., Fl. Neb. 100; Upham, Fl. Minn. 168; Coult., Fl. Colo. 424; Roth., Wheel. Exp. 292; Wats., King Exp. 388; Cov., Fl. Ark. 238.

North America: Q. to Brit. Col. and Vancouver; S. to Fla., Tex. and Mex.

Minn. valley: Reported from forest district and probably W. to Chippewa river; dry or waste places.

BROMUS LINN. Gen. 40 (1737).

Schedonorus BEAUV. Agrostogr. 99 (1812.

Anisantha C. KOCH, Linn. XXI, 394 (1847).

Serrafalcus PARLAT. Pl. Nov. 75 (1842).
Libertia LEJEUNE, Nov. Act. Cur. XII, 755 (——).
Michelaria DUM. Agrostogr. Belg. 77 (1823).
Triniusa STEUD. Syn. Glum. I, 328 (1855).
Ceratochloa BEAUV. Agrostogr. 75 (1812).

Benth. and Hook., *Gen. Pl.* III, 1200; Durand, *Ind. Gen. Phan.* 478; Engler and Prantl, *Nat. Pflanz.* 2, II, 75 (Hackel).

Living species: 40; cosmoplitan; especially in N. temperate regions; a few in tropical mts. and in the S. hemisphere. Europe, 42 (*Richter*); N. America, 12; Canada, 10; California, 6; S. Sts., 4; Rocky mts., 3; E. Sts., 2; Pl. Wheel., 2; Pl. King., 2.

Bromus purgans LINN. Spec. 76 (1753).

B. ciliatus var. *purgans* GRAY, Man. ed. I, 600 (1848).

Wats. and Coult., Gray's Man. 6 ed. 670; Britt., Fl. N. J. 297; Chap., Fl. S. St. 566; Upham, Fl. Minn. 168; Led., Fl. Ross. IV. 361? Cov., Fl. Ark. 238; Webb., Appx. Neb. 25.

Kamtschatka and S. America?

North America: N. Eng., to Fla.; W. to Minn., Dak. and Neb.

Minn. valley: Throughout; abundant; river banks, shores of lakes and woodlands.

HERB.: *Ballard, 214*, Jordan, Scott Co.; *Ballard 707*, Waconia; *Sheldon 1594*, Lake Benton; *Sheldon 1307*, Lake Benton; *Sheldon 902*, Sleepy Eye; *Sheldon 558*, Waseca; *Sheldon 1193*, New Ulm; *Ballard 509*, Prior's Lake, Scott Co.; *MacM.* and *Sheld. 60*, Brainerd; *Sandberg 586*, Red Wing; *Oestlund 385*, Minneapolis.

Bromus ciliatus LINN. Spec. 76 (1753).

B. canadensis MICHX. Fl. N. Am. I, 65 (1803).
B. pubescens var. 1, TORR. Fl. U. S. I, 129 (1824).
B. purgans HOOK. Fl. Bor. Am. I, 252 (1833), *in part*
B. inermis var. *ciliata* TRAUTV. Act. Hort. Petrop. V, I, 135 (1877).

Wats. and Coult., Gray's Man. 6 ed. 670; Britt., Fl. N. J. 297; Webb., Fl. Neb. 100; Upham, Fl. Minn. 168; Mac., Fl. Can. II, 237; Coult., Fl. Colo. 425; Wats., Fl. Calif. II, 320; Vas., Ag. Grasses U. S. 74; Led., Fl. Ross. IV, 358; Wats., King Exp. 390; Roth, Wheel. Exp. 292; Cov., Fl. Ark. 238; Rothr., Alask. 458.

North America: N. S., N. Br., Q., Ont., Man., Brit. Col., Vancouver to Kotzebue Sound, Alaska; S. to N. Eng., N. J. and Va.; W. to Minn., Mo., Neb., Colo. and Calif.

Minn. valley: Throughout; woods, banks of streams and shores of lakes.

HERB.: *Ballard 717*, Benton, Carver Co.; *Taylor 1189*, Glenwood; *Ballard 846*, Page Lake, Carver Co.; *Ballard 579*, Crystal Lake, Scott Co.; *MacM.* and *Sheld. 58*, Brainerd; *Bailey 5*, Vermilion Lake; *Sandberg 585*, Red Wing; *Herb. Sheld 1649*, Minneapolis,

Bromus kalmii GRAY, Man. ed. I, 600 (1848).

B. ciliatus LINN. in herb. not spec.

B. purgans TORR. Fl. N. Y. II. 463 (1843), *in part.*

Wats. and Coult., Gray's Man. 6 ed. 670; Britt., Fl. N. J. 297; Coult., Fl. Colo. 425; Mac., Fl. Can. II, 238; Webb., Fl. Neb. 100; Upham, Fl. Minn. 168.

North America: Ont., Ott. and Man.; S. to N. Eng., N. J., Penn.; W. to Minn., Neb., Dak. and Mo.

Minn. valley: Forest district; dry places, fields and meadows.

HERB.: *MacM.* and *Sheld. 59*, Brainerd; *Sandberg 584*, Red Wing; *Leiberg 100*, Blue Earth Co.

AGROPYRUM J. GAERTN. ex. Beauv. Agrost. 101 (1812).

Elytrigia DESVX. Bull. Philom. II, 190 (1810).

Roegneria C. KOCH, Linn. XXI, 413 (1847).

Anthosachne STEUD. Syn. Glum. I, 237 (1855).

Eremopyrum LED. Fl. Alt. I, 112 (1829).

Costia WILLK. Bot. Zeit. 377 (1858).

Cremopyrum SCHUR. Transsylv. 807 (1866).

Haynaldia SCHUR. l. c. 807 (1866).

Heteranthelium HOCHST. Jaub. et Spach, Ill. Or. IV, 24 (1855).

Benth. and Hook., *Gen. Pl.* III, 1202; Durand, *Ind. Gen. Phan.* 479; Engler and Prantl, *Nat. Pflanz.* 2, II, 78 (Hackel).

Living species: 34; temperate regions. Europe 32; (*Richter*); N. America, 10; Canada, 6; Rocky mts., 5; California, 4; E. Sts., 5.

Agropyrum caninum (LINN.) R. and S. Syst. II, 756 (1817).

Triticum caninum LINN. Spec. 86 (1753).

Elymus caninus LINN. Fl. Suec. ed. II, 112 (1755).

Triticum sepium LAM. Enc. Meth. II, 563 (1786).

Festuca nutans MOENCH, Meth. 191 (1794).

Bracconotia elymoides GODR. Fl. Lorr. III, 193 (1844).

Wats. and Coult., Gray's Man. 6 ed. 672: Mac, Fl. Can. II, 241; Britt., Fl. N. J. 298; Wats., Fl. Calif. II. 324; Coult., Fl. Colo. 426; Upham, Fl. Minn. 169; Richt., Pl. Eur. I, 123; Hook., Fl. Gt. Brit. 503.

Europe; Siberia; Himalayas.

North America: N. Br., Q., Ont., Saskatchewan, Brit-Col. and Rocky mts.; S. to N. Eng. and N. J.; W. to Minn., Colo., Nev. and Calif.

Minn. valley: Probably throughout; principally in forest district; waste or dry places.

HERB.: *Bailey 42*, Vermilion lake.

Agropyrum violaceum (HORN.) LANGE, ex. Richt. Pl. Eur. I, 123 (1890).

Triticum violaceum HORN. Fl. Dan. 2044 (1827?).

Wats. and Coult., Gray's Man. 6 ed. 672; Mac., Fl. Can. II, 243; Coult., Fl. Colo., 426; Wats., Fl. Calif. II, 324; Upham, Fl. Minn. 169; Richt., Pl. Eur. I, 123.

N. Scandinavia.

North America; Q., Man., Assiniboia to Rockies, N. W. T. and Grinnell Land—81° 44' N. lat.; Greenland; S. to N. Eng. and mts. of N. Y.; W. to Lake Superior region, Minn. and Dak.

Minn. valley: Throughout; forest openings and railway embankments; infrequent.

HERB.: *Sheldon 979*, Sleepy Eye; *MacM.* and *Sheld. 2*, Brainerd; *Bailey 494* Agate Bay.

Agropyrum glaucum (DESF.) R. and S. var. **occidentale** VAS. and SCRIB.

A. repens AUCT. in part.

Triticum repens var. *glaucum* VAS. Cat. (1885).

Wats. and Coult., Gray's Man. 6 ed. 671; Britt., Fl. N. J. 298; Webb., Fl. Neb. 100; Coult., Fl. Colo. 425; Wats., Fl. Calif. II, 323; Vas., Ag. Grasses U. S. 75; Mac., Fl. Can. II, 242; Upham, Fl. Minn. 169; Engl. Hackel, Nat. Pflanz. II, 2, 79; Richt., Pl. Eur. I, 123 (spec.); Hook., Fl. Gt. Brit. 504 (spec.); Led., Fl. Ross. IV, 340 (spec.); Trautv., Fl. Sib. 133 (spec.).

Species in Europe and Asia.

North America: N. S., Q., Ont. to Man., Brit. Col. and Arctic sea?; S. to N. J. and Va.; W. to Cal., Oregon and Utah.

Minn. valley: Throughout; fields and sterile places.

HERB.: *Ballard 316*, Belle Plaine; *Sheldon 1377*, Lake Benton; *Sheldon 463*, Madison Lake, Blue Earth Co.; *MacM. aud Sheld. 17*, Brainerd; *Bailey 511*, Agate Bay; *Sandberg 587*, Red Wing; *588*, Red Wing.

HORDEUM LINN. Gen. 45 (1737).

Critho E. MEY. Ind. Hort. Regiom. (1848).

Zeocriton BEAUV. Agrostogr. 114 (1812).

Critesion RAF. Journ. Phys. LXXXIX, 103 (1819).

Crithopsis JAUB. et SPACH, Ill. Or. IV, 30 (1855).

Cuviera KOEL. Gram. Gall. et Germ. 328 (1802).

Benth. and Hook., *Gen. Pl.* III, 1206; Durand, *Ind. Gen. Phan.* 480; Engler and Prantl, *Nat. Pflanz.* 2, II, 86 (Hackel).

Living species: 16; temperate Asia, Europe, N. Africa, N. and S. America. Europe, 10; N. America, 5; Canada 3; California, 3; E. Sts., 2; Rocky mts., 2; S. Sts., 1; Pl. King, 3; Pl. Wheel., 2.

Hordeum nodosum LINN. Spec. ed. 2, 126 (1762).

H. murinum var. *B.* LINN. Spec. 85 (1753)
H. secalinum SCHREB. Spic. 148 (1771).
H. pratense HUDS. Fl. Angl. ed. 2, 56 (1778).
Zeocriton secalinum BEAUV. Agr. 115 (1812).
Hordeum pusillum NUTT. Gen. I, 87 (1818).
H. pratense var. *nodosum* LED. Fl. Ross. IV, 329 (1853).

Wats. and Coult., Gray's Man. 6 ed. 672; Webb., Fl. Neb. 99; Coult., Fl. Colo. 426; Mac., Fl. Can. II. 244; Wats., Fl. Calif. II, 325; Upham, Fl. Minn. 169; Vas., Ag. Grasses U. S. 77; Richt., Pl. Eur. I, 131; Chap., Suppl. S. St. 664; Roth , Wheel. Exp. 293; Wats., King Exp. 391; Rothr., Alask. 458.

Europe and Asia; cosmopolitan.

North America: Ohio, Ill., Minn., Neb. to Nev., Colo., Utah, Calif., Oregon; N. to Vancouver; S. to Tex.

Minn. valley: Reported from S. central district; rare or local.

Hordeum jubatum LINN. Spec. 85 (1753).

Critesium geniculatum RAF. Jour. Phys. 103 (1819).

Wats. and Coult., Gray's Man. 6 ed. 672; Britt., Fl. N. J. 298; Webb., Fl. Neb. 99; Upham, Fl. Minn. 169; Wats., Fl. Calif. II, 325; Mac., Fl. Can. II, 243; Vas., Ag. Grasses U. S. 76; Coult., Fl. Colo. 427; Richt., Pl. Eur. I, 131; Trautv., Fl. Sib. 132; Led., Fl. Ross. IV, 329; Roth., Wheel. Exp. 293; Wats., King Exp. 390; Cov., Fl. Ark. 238.

Europe—S. Russia; E. Siberia.

North America: N. S., Q., Ont., Ott., Saskatchewan, Athabasca, Peace river, Vancouver, Brit. Col.; N. to Mackenzie and Yukon regions; S. to Gt. Lakes, Minn., Neb. and Colo.

Minn. valley: Throughout; abundant; waste or sandy places.

HERB.: *Sheldon 176,* Madison Lake, Blue Earth Co.; *Ballard 155,* Chaska; *Foote 6,* Worthington; *Oestlund 336,* Minneapolis; *Kassube 274,* Minneapolis ; *Bailey 128,* Vermilion lake; *Sandberg 589,* Red Wing; *Herb. Sheld. 1801,* Minneapolis.

ELYMUS LINN. Gen. ed. V, 91 (1754).

Sitanion RAF. Journ. Phys. LXXXIX, 103 (1819).
Polyantherix NEES, Ann. Nat. Hist. I, 1, 284 (1838).

Benth. and Hook., *Gen. Pl.* III, 1206; Durand, *Ind. Gen. Phan.* 480; Engler and Prantl, *Nat. Pflanz.* 2, II, 88 (Hackel).

Living species: 30; temperate regions, except Australia and S. Africa. Europe, 4; N. America, 15; Canada, 12–13; E. Sts., 6; California, 5–6; Rocky mts., 4; S. Sts., 3; Pl. King, 2; Pl. Wheel., 4.

Elymus elymoides (RAF.) SWEEZEY, Cat. Neb. Pl. (1891).

Aegilops hystrix NUTT. Gen. I, 86 (1818).
Sitanion elymoides RAF. Jour. Phys. LXXXIX, 103 (1819).

Polyantherix hystrix NEES, Mart. Bras. (1829).
Elymus sitanion R. and S. Mant. II, 426 (1824).
E. hystrix. per legem not Linn.

Wats and Coult., Gray's Man. 6 ed. 673; Upham, Fl. Minn. 170; Wats., Fl. Calif. II, 327; Coult., Fl. Colo. 427; Roth., Wheel. Exp. 293, 377; Wats., King Exp. 391; Webb., Appx. Neb. 24.

North America: Oregon to San Diego, Calif.; E. to Minn., Neb., Ark., Arizona, Tex. and N. Mex.

Minn. valley: Reported from S. central district and westward; infrequent; river banks and wooded hills.

Elymus striatus WILLD. Spec. I (1797).
E. villosus MUHL. Willd. Enum. 131 (1809).
E. striatus var. *villosus* GRAY, Man. ed. V, 639 (1868).

Wats. and Coult., Gray's Man. 6 ed. 673: Britt., Fl. N. J. 299; Mac., Fl. Can. II, 247; Upham, Fl. Minn. 170; Webb., Fl. Neb. 99; Chap., Fl. S. St. 567; Cov., Fl. Ark. 238.

North America: Ont. to N. Y., N. J. and N. Car.; W. to Minn., Neb. and Ark.

Minn. valley: Throughout; infrequent; roadsides and banks.

HERB.: *Sheldon 842*, Sleepy Eye; *Herb. Sheld. 1647*, Hennepin Co.

Elymus canadensis LINN. Spec. 83 (1753).
E. philadelphicus LINN. Amoen. Acad. IV, 266 (1759).
E. glaucifolius WILLD. Enum. I, 131 (1809).
E. canadensis var. *glaucifolius* TORR. Fl. Am. I, 137 (1824).

Wats. and Coult., Gray's Man. 6 ed. 673; Britt., Fl. N. J. 298; Mac., Fl. Can. II, 245; Coult., Fl. Colo. 427; Webb., Fl. Neb. 99; Vas., Ag. Grasses U. S. 77; Upham, Fl. Minn. 169; Wats.. Fl. Calif. II, 327; Chap., Suppl. S. St. 664; Roth., Wheel. Exp. 293; Cov., Fl. Ark. 238.

North America: N. S., Q., Ont., Man., Assiniboia to Rocky mts., Brit. Col. and Oregon; S. to N. Eng., N. J. and mts. of Ga.; W. to Minn., Neb., Colo., Tex. and N. Mex.

Minn. valley: Throughout; abundant; roadsides and banks.

HERB.: *Sheldon 1120*, Springfield; *Sheldon 976½*, Sleepy Eye; *Taylor 762*, Glenwood; *Ballard 389*, Jordan, Scott Co.; *Ballard 578*, Crystal lake, Scott Co.; *Ballard 765*, Waconia [(var. *glaucifolius* (Willd.)]; *Sandberg 591*, Red Wing; *Oestlund 338, 339*, Minneapolis.

Elymus virginicus LINN. Spec. 83 (1753).

Wats. and Coult., Gray's Man. 6 ed. 673; Mac., Fl. Can. II, 247; Webb., Fl. Neb. 99; Chap., Fl. S. St. 567; Upham, Fl. Minn. 169; Britt., Fl. N. J. 298; Vas., Ag. Grasses U. S. 77; Cov., Fl. Ark. 238.

North America: N. S., N. Br., Q., Ont., L. Superior region to Man.; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Kan., Mo. and Ark.

Minn. valley: Throughout; infrequent; banks of streams and lakes.

HERB.: *Foote 7*, Worthington; *Sandberg 590*, Red Wing; *Oestlund 337*, Minneapolis; *Bailey 265*, St. Louis river; *Sheldon 1375*, Lake Benton [(*forma minor* (Vas.)].

HYSTRIX MOENCH, Meth. 294 (1794).

Asprella WILLD. Enum. 132 (1809).

Gymnostichum SCHREB. Beschr. Gräs. II, 127 (1772).

Benth. and Hook., *Gen. Pl.* III, 1207; Durand, *Ind. Gen. Phan.* 280; Engler and Prantl, *Nat. Pflanz.* 2, II, 88 (Hackel); O. Kuntze, *Rev. Gen.* II, 777.

Living species: 4; N. America, 2; Siberia, 1; New Zealand, 1. N. America,—California, 1; Atl. states, 1.

Hystrix hystrix (LINN.).

Elymus hystrix LINN. Spec. ed. 2, 124 (1762).
Gymnostichum hystrix SCHREB. Gräs. 47 (1769).
Hystrix patula MOENCH, Meth. (1794).
Asprella hystrix WILLD. Enum. I, 132 (1809).
A. angustifolia NUTT. Trans. Am. Phil. Soc. ser. 5, 151 (——).

Wats. and Coult., Gray's Man. 6 ed. 674; Upham, Fl. Minn. 170; Britt., Fl. N. J. 299; Chap., Fl. S. St. 567; Mac., Fl. Can. II, 248; Cov., Fl. Ark. 238; Webb., Appx. Neb. 24.

North America: N. Br., Q., Ont., Man. and Saskatchewan; S. to N. Y., N. J. and Ga.; W. to Minn., Dak., Neb., Ill. and Ark.

Minn. valley: Throughout, particularly forest district; woods.

HERB.: *Sheldon 459*, Madison Lake, Blue Earth Co.; *Ballard 128*, Chaska; *Sandberg 592*, Red Wing; *593*, Chisago Co.; *594*, Red Wing.

IX. CYPERACEAE. Sedge Family.

Endlicher, *Gen. Pl.* 109 (1840); Benth. and Hook. *Gen. Pl.* III, 1037 (1883); Pax *in Engler and Prantl*, *Nat. Pflanz.* 2, II, 98 (1887).

Genera: 65; cosmopolitan; extinct, 1–2.

Species: 3000; living; 3–4 ? extinct.

HEMICARPHA NEES, Edin. Phil. Journ. XVII, 263 (1834).

Benth. and Hook., *Gen. Pl.* III, 1053; Durand, *Ind. Gen. Phan.* 458; Engler and Prantl, *Nat. Pflanz.* 2, II, 105 (Pax).

Living species: 3; 1 widely distributed in tropical and subtropical regions; 1, California; 1, Atl. N. America, Mexico and Brazil.

Hemicarpha micrantha (VAHL) BRITT. Cat. N. J. 266 (1890).

Isolepis micrantha VAHL, Enum. (1806).
Scirpus subsquarrosus MUHL. Gram. 39 (1817).
Hemicarpha subsquarrosa MART. Fl. Brazil II, 61 (1842).

Wats. and Coult., Gray's Man. 6 ed. 583; Upham, Fl. Minn. 150; Coult., Fl. Colo. 368; Wats., Fl. Calif. II, 220; Chap , Fl. S. St. 513; Roth., Wheel. Exp. 275; Cov., Fl. Ark. 230; Webb., Appx. Neb. 24.

Brazil and Central America.

North America: N. Eng., N. J. to Fla.; W. to Minn., Colo., Calif. and Arizona.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; probably infrequent; sandy lake-beaches.

HERB.: *Leiberg 78*, Le Sueur river, Blue Earth Co.

DULICHIUM PERS. Syn. I, 65 (1805).

Benth. and Hook., *Gen. Pl.* III, 1046; Durand, *Ind. Gen. Phan.* 456; Engler and Prantl, *Nat. Pflanz.* 2, II, 107 (Pax).

Living species: 1; N. America, Atlantic states.

Dulichium spathaceum (LINN.) PERS. Syn. I, 65 (1805).

Schoenus spathaceus LINN. Spec. ed. 2, 63 (1762).
Cyperus spathaceus LINN. Syst. 84 (1774).
Scirpus spathaceus MICHX. Fl. N. Am. I, 32 (1803).
Schoenus angustifolius VAHL, Enum. II, 225 (1806).
Dulichium canadense PURSH, Fl. Am. I, 54 (1814).

Wats. and Coult., Gray's Man. 6 ed. 573; Britt., Fl. N. J. 262; Mac., Fl. Can. II, 94; Upham, Fl. Minn. 150; Chap., Fl. S. St. 513; Engl. Pax, Nat. Pflanz. II, 2, 107; Cov., Fl. Ark. 229; Webb., Appx. Neb. 24.

North America: N. S., N. Br., Saskatchewan and Vancouver; S. to N. J. and Fla.; W. to Minn., Neb. and Tex.

Minn. valley: Forest district and N. edge; possibly S. W.; edges of lakes and marshes.

HERB.: *Ballard 833*, Patterson lake, Carver Co.; *Ballard 815*, Page lake, Carver Co.; *Ballard 775*, Swan lake, Carver Co.; *MacM. and Sheld. 16*, Brainerd; *Sandberg 513*, "Minnesota"; *Herrick 322*, Minneapolis; *Leiberg 77*, Blue Earth Co.

CYPERUS LINN. Gen. 33 (1737).

Bobartia LINN. Zeyl. 17 (1747).
Mariscus VAHL, Enum. II, 372 (1806).
Opetiola GAERTN. Fruct. I, 14 (1788).
Adupla BOSC. Jaume St. Hil. Expos. Fam. Nat. I, 65 (1805).
Pycreus BEAUV. Fl. Ow. and Ben. II, 48 (1807).
Torreya and **Distimus** RAF. Jour. Phys. LXXXIX, 105 (1819).
Anosporum and **Dichostylis** NEES, Linn. IX, 287, 289 (1835).
Trentepohlia BOECKL. Bot. Zeit. 249 (1858).
Sorostachys and **Atomostylis** STEUD. Syn. Glum. II, 315 (1855).

Galilea PARLAT. Palerm. I, 297 (1845).
Papyrus WILLD. Abh. Ac. Wiss. Berl. 70 (1812–13).
Borobora STEUD. Syn. Glum. II, 71 (1855).
Hydroschoenus ZOLL. ET MORR. Verz. Pl. Zoll. 95 (1828?).
Diclidium SCHRAD. Mart. Fl. Bras. II, 1, 51 (1829).
Torulinium DESV. Ham. Prodr Ind. Occ. 15 (1825).

Benth. and Hook., *Gen. Pl.* III, 1043; Durand, *Ind. Gen. Phan.* 456; Engler and Prantl, *Nat. Pflanz.* 2, II, 107 (Pax); Schenck, *Palaeophyt.* 383.

Living species: 400; tropical and temperate regions. Europe, 24; Russia, 14; Russian Europe, 6; U. S., 60; S. Sts., 41; E. Sts., 25; California, 11–14; Canada, 8; Rocky mts., 3; Pl. King, 3; Pl. Wheel., 7.

Fossil species: ? Miocene, Oeningen—*Cyperites.*

Cyperus speciosus VAHL, Enum. II, 253 (1806).
C. strigosus LAM. Ill. I, 726 (1791).
C. erythrorhizos TORR. Fl. I, 61 (1824).
C. michauxianus TORR. Fl. N. Y. II, 339 (1843).

Wats. and Coult., Gray's Man. 6 ed. 572; Britt., Fl. N. J. 261; Upham (*C. michauxianus* Schultes for Torr.?), Fl. Minn. 150 ?; Chap., Fl. S. St. 507; Wats., Fl. Calif. II, 215; Webb., Fl. Neb. 99; Britt., Torr. Bull. XIII, 214.

North America: N. Eng. to Fla.; W. to Minn., Neb., Tex., N. Mex.; Gila and Rio Colorado to Ft. Yuma.

Minn. valley: Reported from S. central district; low and sandy shores.

HERB.: ? *Sandberg 509,* Red Wing.

Cyperus strigosus LINN. Spec. 47 (1753).
C. flavicomus MICHX. Fl. N. Am. I, 27 (1803).
C. michauxianus SCHULTES, Mant. II, 123 (1824).
C. stenolepis WATS. Fl. Calif. II, 215 (1880).

Wats. and Coult., Gray's Man. 6 ed. 571; Britt., Fl. N. J. 261; Upham, Fl. Minn. 150; Mac., Fl. Can. II, 94; Chap., Fl. S. St. 507; Cov., Fl. Ark. 229; Britt., Torr. Bull. XIII, 211; Webb., Appx. Neb. 24.

North America: Greenland and N. S. to Hudson Bay and Saskatchewan; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Tex. and Pac. coast.

Minn. valley: Forest district; not infrequent; damp places along streams.

HERB.: *Sheldon 1070,* Springfield; *Herrick 321,* Minnetonka; *Sandberg 508,* Goodhue Co.

Cyperus strigosus LINN. var. **compressus** BRITT. Torr. Bull. XIII, 211 (1887).

Britt., Fl. N. J. 261.

N. J. and Penn. to Minn.

Minn. valley: Reported from S. Minn.; damp or drier places.

Cyperus esculentus LINN. Spec. 45 (1753).

C. phymatodes MUHL. Gram. 23 (1817).

C. repens ELL. Sk. I, 69 (1821).

Wats. and Coult., Gray's Man. 6 ed. 571; Britt., Fl. N. J. 260; Upham, Fl. Minn. 150; Webb., Fl. Neb. 99; Wats., Fl. Calif. II. 215; Mac., Fl. Can. II. 93; Chap., Fl. S. St. 508? Richt., Pl. Eur. 135; Engl. Pax., Nat. Pflanz. II, 2, 108; Cov., Fl. Ark. 229; Britt., Torr Bull. XIII, 210.

Cosmopolitan.

North America: N. Br. to L. Erie; S. to Fla.; W. to Minn., Yosemite and Tex.

Minn. valley: Reported from forest district; rare; low places along streams.

Cyperus erythrorhizos MUHL. Gram. (1817).

Wats. and Coult., Gray's Man. 6 ed. 571; Britt., Fl. N. J. 261; Upham, Fl. Minn. 150; Mac., Fl. Can. II. 94; Chap., Fl. S. St. 512; Wats., Fl. Calif. II. 215; Cov., Fl. Ark. 229; Britt., Torr. Bull. XIII, 213,

North America: W. Ont. to L. I., N. J., Penn.; S. to Fla.; W. to Minn., Mich. and N. Mex.; also, Rio Colorado to Oregon.

Minn. valley: Throughout; rather common; banks.

HERB.: *Sheldon 880*, Sleepy Eye; *Ballard 802*, Goose lake; *Ballard 832*, Page lake; *Ballard 892*, St. Bonifacius; *Taylor 1117*, Glenwood; *Ballard 274*, Jordan, Scott Co.; *Sheldon 1633*, Taylor's Falls; *MacM.* and *Sheld. 29*, Brainerd; *Sandberg 506*, Goodhue Co.

Cyperus filiculmis VAHL, Enum. II, 328 (1806).

Scirpus cyperiformis MUHL. Gram. 41 (1819).

Cyperus mariscoides ELL. Sk. I, 67 (1821).

Wats. and Coult., Gray's Man. 6 ed. 570; Britt., Fl. N. J. 261; Mac., Fl. Can. II, 94; Upham, Fl. Minn. 150; Webb., Fl. Neb. 99; Chap., Fl. S. St. 511; Coult., Fl. Colo. 366; Cov., Fl. Ark. 229; Britt., Torr. Bull. XIII. 216.

North America: Ont. to N. Eng. and N. J.; S. to Fla.; W. to Minn., Neb., Kan., Ark., Colo. and Tex.

Minn. valley: Forest district and perhaps W.; dry and waste places.

HERB.: *Ballard 636*, Chaska, Carver Co.; *MacM.* and *Sheld. 25*, Brainerd; *Ballard 18a*, Goodhue Co.; *Leiberg 76*, Blue Earth Co.; *Sandberg 511*, Red Wing; *512*, Red Wing.

Cyperus schweinitzii TORR. Cyp. 276 (1836).

C. alterniflorus SCHWEIN. Long Appx. II, 381 (1825) *not R. Br.*

Wats. and Coult., Gray's Man. 6 ed. 570; Webb., Fl. Neb. 99; Upham, Fl. Minn. 150; Mac., Fl. Can. II, 93; Roth., Wheel. Exp. 274; Britt., Torr. Bull. XIII, 207.

North America: Ont. to L. of Woods, Qu'Appelle, Assiniboia; S. to W. N. Y. and Penn.; W. to Minn. Neb. and Can.

Minn. valley: Throughout; sandy ridges and shores of streams; abundant.

HERB.: *Ballard 260,* Jordan, Scott Co.; *Ballard 635,* Chaska; *Sheldon 1056,* Sleepy Eye; *Sheldon 1193,* New Ulm; *Taylor 1149,* Glenwood; *MacM.* and *Sheld. 26* Brainerd; *Kassube 251,* Minneapolis; *Oestlund 212,* Minneapolis; *Leiberg 75,* Blue Earth Co.; *Sandberg 510,* Red Wing.

Cyperus aristatus ROTTB. Descr. 23 (1773).

C. uncinatus PURSH, Fl. Am. I, 50 (1814).
C. inflexus MUHL. Gram. (1817).
C. confertus CHAPM. Fl. S. St. 510 (1860).

Wats. and Coult., Gray's Man. 6 ed. 570; Britt., Fl. N. J. 260; Webb., Fl. Neb. 99; Mac., Fl. Can. II. 93; Wats., Fl. Calif II, 214; Coult., Fl. Colo. 366; Wats., King Exp. 360; Cov., Fl. Ark. 228; Britt., Torr. Bull XIII, 207.

Africa; E. Indies.

North America: Ont. to Man., Saskatchewan and Vancouver; S. on Pac. to S. Calif. and Lower Calif.; E. throughout U. S. to N. Eng. and Fla.; S. to Mexico.

Minn. valley: Throughout; abundant; sandy shores of rivers and ponds.

HERB.: *Sheldon 1208,* Redstone, near New Ulm; *Sheldon 998,* Sleepy Eye; *Sheldon 1474,* Pipestone; *Sheldon 1090,* Springfield; *MacM.* and *Sheld. 6,* Brainerd; *Sandberg 507,* Red Wing.

Cyperus diandrus TORR. Cat. N. Y. 90 (1819).

Wats. and Coult., Gray's Man. 6 ed. 569; Britt., Fl. N. J. 260; Chap., Fl. S. St. 506; Mac., Fl. Can. II. 92; Wats., Fl. Calif. II, 214; Cov., Fl. Ark. 229; Britt., Torr. Bull. XIII, 305; Upham, Fl. Minn. 150; Webb., Appx. Neb. 24.

North America: N. Br., Owen Sound, N. Eng.; S. to N. J., Fla.; W. to Minn., Neb., Ark., Tex. and N. Mex.; Calif?

Minn. valley: Throughout; low places and margins of lakes.

HERB.: *Taylor 1052,* Glenwood; *Taylor 1144,* Glenwood; *Ballard 834,* Page lake, Carver Co.; *Sheldon 1629,* Taylor's Falls; *MacM.* and *Sheld. 22,* Brainerd; *Leiberg 74,* Blue Earth Co.; *Oestlund 210,* Hennepin Co.; *211* Ramsey Co.

Cyperus diandrus TORR. var. **castaneus** (BIGEL.) Torr. Cat. N. Y. 90 (1819).

C. castaneus BIGEL. Fl. Bost. 18 (1814).
C. flavescens var. *castaneus* PURSH, Fl. Am. I, 52 (1814).
C. bicolor BARTR. Fl. Phil. I, 27 (1818).
C. elliotianus R. and S. Mant. II, 100 (1824).
? *C. rivularis* KUNTH, Enum. I, (1833).

Wats. and Coult., Gray's Man. 6 ed. 569; Britt., Fl. N. J. 260; Upham, Fl. Minn. 150; Mac., Fl. Can., II. 93; Britt., Torr. Bull. XIII, 205; Webb., Appx. Neb. 24.

North America: N. Br. to Owen Sound; S. to N. J. and Fla.; W. to Minn., Neb., N. Mex. and Tex.; Sacramento and San Francisco, Calif.

Minn. valley: Reported from S. E. and forest district; banks of lakes, sandy beaches.

ERIOPHORUM LINN. Gen. 34 (1737).
Linagrostis ADANS. Fam. II, 41 (1763).
Trichophorum PERS. Syn. I, 69 (1805).

Benth. and Hook., *Gen. Pl.* III, 1052; Durand, *Ind. Gen. Phan.* 457; Engler and Prantl, *Nat. Pflanz.* 2. II, 111. (Pax).

Living species: 13; Europe, extratropical Asia and N. America. Europe, 8; Russia, 8; Russian Europe, 8; N. America, 10–11; Canada, 9–10; S. Sts., 2; Rocky mts., 2; E. Sts., 7; California, 2; Pl. King., 1.

Eriophorum virginicum LINN. Spec. 52 (1753).

Wats. and Coult., Gray's Man. 6 ed. 583; Britt., Fl. N. J. 265; Upham, Fl. Minn. 152; Webb., Fl Neb. 98; Chap., Fl. S. St. 521; Mac., Fl. Can. II, 105; Engl. Pax, Nat. Pflanz. II, 2, 111.

North America: Newf., N. S., N. Br., Q., Ont. to Saskatchewan; S. to N. J., Fla.; W. to Minn., Neb. and Tex.

Minn. valley: Reported from S. E. district; doubtful; bogs and marshes.

Eriophorum gracile KOCH, Roth. Cat. II, 259 (1800).
Linagrostis paniculata var. *B.* LAM. Fl. Fr. III, 555 (1778).
Eriophorum triquetrum HOPPE, Taschenb. 106 (1800).
E. angustifolium TORR. Fl. N. Y. II, 359 (1843).
E. gracile var. *paucinervium* ENGELM. Gray's Man. ed. 2, 502 (1852).

Wats. and Coult., Gray's Man. 6 ed. 583; Mac., Fl. Can. II, 106; Upham, Fl. Minn. 152; Wats., Fl. Calif. II, 220; Coult., Fl. Colo. 368; Britt., Fl. N. J. 266; Richt., Pl. Eur. 136; Hook., Fl. Gt. Brit. 446; Led., Fl. Ross. IV, 255; Trautv., Fl. Sib. 122; Herd., Fl. Eur. Russ. 138; Hart., Fl. Scand. I, 450; Webb, Appx. Neb. 24; Rothr., Alask. 457.

Northern and central Europe; Siberia.

North America:. Newf. and N. S. to Hudson Straits, Saskatchewan, Arctic sea and Ft. Wrangel, Alaska; S. to N. J., Minn., Neb. and Mo.

Minn. valley: Forest district; bogs and edges of marshes.

HERB.: *Ballard 483*, Prior's lake, Scott Co.; *Taylor 519*, Mud Lake, Waseca Co.; *Ballard 114*, Chaska; *Taylor 87*, Elysian; *Sheldon 340*, Madison Lake; *Leiberg 83*, Blue Earth Co.; *Sandberg 522*, Chisago lake.

Eriophorum latifolium HOPPE, Taschenb. 108 (1800).

E. polystachion LINN. Fl. Suec. ed. II, 17 (1755).
E. polystachyon DC. Fl. Fr. III, 131 (1805).
Linagrostis paniculata LAM. Fl. Fr. III, 555 (1778).
Eriophorum vulgare PERS. Syn. I, 70 (1805).
Carex alopecurus LAB. Abr. Suppl. 141 (1818).
Eriophorum pubescens Sm. Engl. Fl. I, 78 (1824).
E. polystachyon var. *latifolium* GRAY, Man. 5 ed. (1868).

Wats. and Coult., Gray's Man. 6 ed. 583; Richt., Pl. Eur. 136; Mac., Fl. Can. II, 105; Upham, Fl. Minn. 152; Rothr., Alask. 457.

North America: Newf. to Alaska; S. to N. Eng. and Minn.

Minn. valley: N. E. district and to Blue Earth Co.; bogs and edges of marshes.

HERB.: *Bailey 202*, Vermilion lake.

Eriophorum polystachion LINN. Spec. 52 (1753).

Linagrostis polystachya SCOP. Fl. Carn. ed. 2, I, 48 (1772).
Eriophorum angustifolium ROTH. Fl. Germ. II, 63 (1793).
E. vulgare PERS. Syn. I, 70 (1805).

Wats. and Coult., Gray's Man. 6 ed. 583; Britt., Fl. N. J. 265; Mac., Fl. Can. II, 105; Chap., Fl. S. St. 521; Coult., Fl. Colo. 368; Upham, Fl. Minn. 152; Wats., Fl. Calif. II, 220; Richt., Pl. Eur. 136; Hook., Fl. Gt. Brit. 445; Engl. Pax, Nat. Pflanz. II, 2, 111; Wats., King Exp. 275; Hart., Fl. Scand. I, 449; Rothr., Alask. 457.

All Europe except Greece; N. Asia.

North America: Newf., N. S., N. Br., Q. to Hudson Straits, Arctic Sea and Vancouver; S. to Oregon and N. Cal.? W. Col. to Rocky mts. and across continent to N. Eng. and Ga.

Minn. valley: Throughout; abundant; bogs and edges of swamps.

HERB.: *Taylor 738*, Glenwood; *Taylor 1108*, Glenwood; *Sheldon 208*, Lake Washington, Blue Earth Co.; *Sheldon 339*, Madison Lake, Blue Earth Co.; *MacM.* and *Sheld. 28*, Brainerd; *Leiberg 82*, Blue Earth Co.; *Herrick 323*, Minneapolis; *Sandberg 521*, Red Wing; *Herb. Sheld. 1715*, Minneapolis; *Herb. Moyer 243*, Montevideo.

Eriophorum vaginatum LINN. Spec. 52 (1753).

Linagrostis vaginata SCOP. Fl. Can. 2 ed. I, 47 (1772).
Eriophorum caespitosum HOST. Gram. I, 39 (1801).

Wats. and Coult., Gray's Man. 6 ed. 582; Mac., Fl. Can. II, 103; Upham, Fl. Minn. 152; Richt., Pl. Eur. 136; Hook., Fl. Gt. Brit. 445: Led., Fl. Ross. IV, 252; Trautv., Fl. Sib. 121; Herd., Fl. Eur. Russ. 138; Engl. Pax, Nat. Pflanz. II, 2, 111; Hart., Fl. Scand. I, 450; Rothr., Alask. 457.

Middle and northern Europe; temperate and northern Asia.

North America: Greenland, Labrador and Newf. to Hudson Bay, Brit. Col., Vancouver and Yukon region, Alaska;

S. to N. S., N. Br., N. Eng., N. J., Penn.; W. to Mich., Minn., Dak. and Montana.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; bogs and marshes; rare.

HERB.: *Leiberg 80,* Blue Earth Co.; *Leiberg 81,* Blue Earth Co.; *Sandberg 520,* Chisago Lake; *Kassube 256,* Minneapolis.

Eriophorum cyperinum LINN. Spec. ed. 2, 77 (1762).

Trichophorum cyperinum PERS. Syn. I, 69 (1805).
Scirpus eriophorus VAHL, Enum. II, 282 (1806).
S. thyrsiflorus WILLD. Enum. I, 78 (1809).
S. cyperinus KUNTH, Enum. II, 170 (1837).
S. (Trichophorum) eriophorum TORR. Fl. N. Y. II, 356 (1843).

Wats. and Coult., Gray's Man. 6 ed. 582; Britt., Fl. N. J. 265; Upham, Fl. Minn. 152; Mac., Fl. Can. II, 102; Chap., Fl. S. St. 521; Engl. Pax, Nat. Pflanz. II, 2, 111; Cov., Fl. Ark. 230.

North America: Newf., Hudson Bay to Saskatchewan; S. to N. J., Fla., Minn., Neb. and Ark.

Minn. valley: Forest district and N. W.; marshes and swamps.

HERB.: *Ballard 479,* Prior's lake, Scott Co.; *Ballard 454,* Prior's lake, Scott Co.; *Ballard 549,* Spring lake, Scott Co.; *MacM.* and *Sheld. 65,* Brainerd; *Leiberg 79,* Blue Earth Co.; *Bailey 164,* Vermilion lake; *Herb. Sheld. 1922,* Minneapolis.

Eriophorum lineatum (MICHX.) B. and H. Gen. Pl. III, 1052 (1883).

Scirpus lineatus MICHX. Fl. N. Am. I, 32 (1803).
Trichophorum lineatum PERS. Syn. I, 69 (1805).
Scirpus pendulus MUHL. Gram. 44 (1817).
Isolepis lineata R. and S. Syst. II, 117 (1817).

Wats. and Coult., Gray's Man. 6 ed. 582; Britt., Fl. N. J. 265; Upham, Fl. Minn. 152; Chap., Fl. S. St. 521; Coult., Fl. Colo. 368; Mac., Fl. Can. II, 103; Engl. Pax, Nat. Pflanz. II, 2, 111.

North America: S. W. Ont. and N. Eng. to N. J. and Ga.; W. to Minn., W. Kan. and Mo.

Minn. valley: Reported from forest district; Ft. Snelling to Blue Earth Co.; low places along streams and around ponds.

SCIRPUS LINN. Gen. 32 (1737).

Haplostemum, Aplostemon, Diplarrhenus, Distichmus RAF. Jour. Phys. LXXXIX, 105 (1819).

Oxycaryum, Blepharolepis NEES, Mart. Fl. Bras. II, 90, 91 (1829).

Androcoma NEES, Hook. Jour. Bot. II, 396 (1836).

Malachochaete, Hymenochaete NEES, Linn. IX, 292, 293 (1835).

Nomochloa, Hymenochaeta BEAUV. Lestib. Ess. Fam. Cyp. 37, 43 (1819).

Blysmus PANZ. R. and S. Syst. II, Mant. 41 (1824).

Pterolepis SCHRAD. Gött. Gel. Anz. 2071 (1821).

Heleophylax LESTIB. Ess. Fam. Cyp. 41 (1819).

Hellmuthia, Anthophyllum STEUD. Syn. Glum. II, 90, 160 (1855).

Elytrospermum C. A. MEY. Mem. Sav. Etr. Petr. I, 200 (1841?).

Desmoschoenus HOOK. f. Fl. N. Zeal. I, 271 (1867).

Eleogiton, Holoschoenus LINK, Hort. Berol. I, 284, 293 (1827).

Dichostylis BEAUV. Lestib. Ess. Fam. Cyp. 39 (1819).

Isolepis R. BR. Prodr. 221 (1810).

Nemum DESVX. Ham. Prodr. Ind. Occ. 13 (1825).

Baeothryon EHRH. Beitr. IV, 147 (1789).

Benth. and Hook., *Gen. Pl.* III, 1049; Durand, *Ind. Gen. Phan.* 457; Engler and Prantl, *Nat. Pflanz.* 2, II, 111 (Pax); Schenck, *Palaeophyt.* 385.

Living species: 200; 300 described; cosmopolitan. Europe, 37; Russia, 20; Russian Europe, 10; U. S., 35–40; Canada, 10; S. Sts., 14; E. Sts., 17–19; Rocky mts., 10; California, 12–15; Pl. King, 5; Pl. Wheel., 5.

Fossil species: Cyperites? Miocene, Oeningen.

Scirpus atrovirens MUHL. Gram. 43 (1817).

? *S. polyphyllus* VAHL, Enum. II, 274 (1806).

S. sylvaticus var. *atrovirens* GRAY, Man. ed. 2, (1856).

Wats. and Coult., Gray's Man. 6 ed. 581; Britt., Fl. N. J. 265, Webb., Fl. Neb. 98; Upham, Fl. Minn. 152; Wats., Fl. Calif. II, 219; Mac., Fl. Can. II, 101; Coult., Fl. Colo. 368; Cov., Fl. Ark. 230.

North America: N. S., N. Br., Q., Ont. to Man. and Saskatchewan; S. to N. Eng. and N. J.; W. to Minn., Neb., Kan., Ark., Ind. Terr., Colo. and to Calif. and Oregon.

Minn. valley: Throughout; marshes and bogs; abundant.

HERB.: *Taylor 763,* Glenwood; *Sheldon 1303,* Lake Benton; *Sheldon 1081,* Springfield; *Sheldon 1042,* Sleepy Eye; *Sheldon 673,* Gaiter lake, Waseca Co.; *Ballard 217,* Jordan, Scott Co.; *Taylor 634,* Minnesota lake; *MacM.* and *Sheld. 41,* Brainerd; *Sandberg 519,* Red Wing; *Oestlund 217,* Hennepin Co.; *Sheldon 252,* Lake Washington, Le Sueur Co.

Scirpus sylvaticus LINN. var. **microcarpus** (PRESL).

S. microcarpus PRESL, Rel. Haenk. I, 193 (1830).

S. sylvaticus HOOK. Fl. Am. II, 230 (1840).

S. lenticularis TORR. Cyp. 328 (1836).

S. sylvaticus var. *digynus* BOECKL. Linn. XXXVI, 727 (1862).

Wats. and Coult., Gray's Man. 6 ed. 581; Mac., Fl. Can. II, 101; Wats., Fl. Calif. II, 219; Upham, Fl. Minn. 152; Coult., Fl. Colo. 368; Rothr., Fl. Alask. 457; Britt., Trans. N. Y. Acad. XI, 74-93.

North America: N. S., Ont. to Minn., Man., Selkirks and Vancouver; N. to Hudson Bay and Yukon river; S. to Colo. and Calif.

Minn. valley: Forest district; along streams and in edges of marshes.

HERB.: *Sheldon 275*, Madison Lake; *Ballard 12a*, Zumbrota; *Sandberg 611*, Red Wing; *Ballard 340*, Jordan, Scott Co.

Scirpus fluviatilis (TORR.) GRAY, Man. v ed. 564 (1868).

S. maritimus var (?) *fluviatilis* TORR. Fl. N. Y. II, 354 (1843), *excl. syn.*

? *S. robustus* PURSH, Fl. Am. I, 56 (1814), *in part.*

Wats. and Coult., Gray's Man. 6 ed. 581; Britt., Fl. N. J. 265; Upham, Fl. Minn. 151; Webb., Fl. Neb. 99; Mac., Fl. Can. II. 100; Coult., Fl. Colo. 367.

North America: Q., Ont. to Man.; S. to W. Vt., Conn., N. J., Penn.; W. to Minn., Neb., Iowa and Mont.?

Minn. valley; Throughout; but principally in forest district; shallow waters, borders of lakes.

HERB.: *Sheldon 249*, Lake Washington, Le Sueur Co.; *Ballard 54*, Chaska; *Sheldon 982*, Cross lake, Brown Co.; *Bailey 21*, Vermilion lake; *Oestlund 216*, Minneapolis.

Scirpus lacustris LINN. Spec. 48 (1753).

S. altissimus GILIB. Exerc. Phyt. II, 514 (1792).

S. validus PURSH, Fl. Am. I, 56 (1814).

S. brayi HOPPE, R. and S. Syst. II, 137 (1817).

S. orgylis RAF. Am. Nat. (1820).

S. andrzejowskii, janii, lithuanicus, manophyllus, wolfgangii BESS. Schultes Mant. II, 535 (1824).

S. glaucus SM. Engl. Fl. I, 57 (1824).

Heleogiton glaucum REICH. Fl. Exc. 77 (1830).

Scirpus custoris HEG. Fl. Sched. 49 (1840).

Schoenoplectus lacustris and *tabernaemontani* PALLA, Sitzb. Z. B. G. XXXVIII, 49 (1888).

Wats. and Coult., Gray's Man. 6 ed. 580; Britt., Fl. N. J. 264; Upham, Fl. Minn. 151; Mac., Fl. Can. II, 99; Webb., Fl. Neb. 99; Chap., Fl. S. St. 520; Wats., Fl. Calif. II. 217; Coult., Fl. Colo. 367; Richt., Pl. Eur. 140; Hook., Fl. Gt. Brit. 442; Led., Fl. Ross.; Herd., Fl. Eur. Russ. 138; Cov., Fl. Ark. 230; Hart., Fl. Scand. I. 445.

Europe; Asia; Australasia; Sandwich Islands.

North America: Newf., N. S., N. Br. to Lake Winnipeg, Saskatchewan, Brit. Col. and Vancouver; S. to Fla.; W. to Rockies and Pac. coast *(in var.)*

Minn. valley: Throughout; edges of ponds; shallow lakes.

HERB.: *Taylor 213*, Janesville; *Ballard 31*, Chaska; *Sheldon 876*, Sleepy Eye; *Sheldon 1083*, Springfield; *Taylor 410*, Lake Elysian; *Bailey 219*, Vermilion lake; *Kassube 255*, Hennepin Co.; *Sandberg 518*, Goodhue Co.

Scirpus triangularis (PERS.).

S. mucronatus ALL. Fl. Ped. II, 277 (1785).

S. triqueter ROTH. N. Beitr. I, 91 (1802).

S. triqueter var. *triangularis* PERS. Syn. I, 91 (1805).

S. americanus PERS. Syn. I, 92 (1805).

S. pungens VAHL. En. II, 255 (1806).

S. rothii HOPPE, Sturm Dan. Fl. II, 36 (1814).

S. tenuifolius DC. Fl. Fr. VI, 300 (1815).

Eleocharis leptophylla SCHULT. Mant. II, 88 (1824).

Heleogiton pungens REICH. Fl. Exc. 78 (1830).

Schoenoplectus pungens PALLA, Sitz. Z. B. G. XXXVIII, 49 (1888).

Wats. and Coult., Gray's Man. 6 ed. 579; Britt., Fl. N. J. 264; Upham, Fl. Minn. 151; Mac., Fl. Can. II, 99; Webb., Fl. Neb. 99; Chap., Fl. S. St. 519; Coult., Fl. Colo. 366; Wats., Fl. Calif. II, 218; Richt., Pl. Eur. 141; Hook., Fl. Gt. Brit. 442; Roth., Wheel. Exp. 275; Cov., Fl. Ark. 230.

Central Europe; Mediterranean region; Australia; S. America and W. Indies.

North America: Newf., Hudson Bay and Saskatchewan to Vancouver and Ft. Wrangel, Alaska; S. throughout N. Amer.

Minn valley: Forest district and W. ?; borders of lakes, ponds and streams.

HERB.: *Sheldon 86*, Elysian; *Kassube 254*, Minneapolis; *Oestlund 215*, Minneapolis.

HELEOCHARIS R. BR. Prodr. 224 (1810).

Bulbostylis RAF. Bull. Mosc. X, 355 (1813).

Limnochloa, Scirpidium, Chaetocyperus, Eleogenus NEES, Linn. IX, 289, 293, 294 (1835).

Benth. and Hook., *Gen. Pl.* III, 1047; Durand, *Ind. Gen. Phan.* 456; Engler and Prantl, *Nat. Pflanz.* 2, II, 112 (Pax).

Living species: 80; tropics and N. hemisphere to Arctic regions. Europe, 8; Russia, 8; Russian Europe, 8; N. America, 30; S. Sts., 25; E. Sts., 21; California, 9–10; Canada, 10; Rocky mts., 5; Pl. King, 2; Pl. Wheel., 2.

Heleocharis wolfii GRAY, Proc. Am. Acad. X, 77 (1874).

Wats. and Coult., Gray's Man. 6 ed. 576; Upham, Fl. Minn. 151; Britt., Journ. N. Y. Micro. Soc. V, 105.

North America: Iowa and Minn.

Minn. valley: Reported from edge of valley; doubtful or local; wet prairies and edges of sloughs.

HERB.: *Cratty 20*, Emmet Co., Iowa.

Heleocharis acicularis (LINN.) R. BR. Prodr. I, 80 (1810).

Scirpus acicularis LINN. Spec. 48 (1753).
Cyperus acicularis WITH. Arr. Brit. Pl. 78 (1776).
Mariscus acicularis MOENCH, Meth. 350 (1794).
Scirpus trichodes MUHL. Gram. 30 (1817).
Eleocharis costata PR. Fl. Cech. 11 (1819).
Isolepis acicularis SCHLECHT. Fl. Berol. I, 36 (1823).
Scirpus chaeta SCHULTES, Mant. II, 272 (1824).
Clavula acicularis DUM. Fl. Belg. 143 (1827).
Linnochloa acicularis REICH. Fl. Exc. 78 (1830).
Scirpidium acicularis NEES, Linn. IX, 293 (1835).
Chaetocyperus urceolatus LEIBM. Mex. Halvg. 243 (1849).

Wats. and Coult., Gray's Man. 6 ed. 576; Britt., Fl. N. J. 263; Upham, Fl. Minn. 151; Webb., Fl. Neb. 99; Coult., Fl. Colo. 369; Mac., Fl. Can. II, 97; Chap., Fl. S. St. 518; Wats., Fl. Calif. II, 221; Richt., Pl. Eur. 143; Led., Fl. Ross. IV, 243; Hook., Fl. Gt. Brit. 441; Herd., Fl. Eur. Russ. 138; Engl. Pax, Nat. Pflanz. II, 2, 112; Wats., King Exp. 360; Roth., Wheel. Exp. 275, 376; Cov., Fl. Ark. 229; R. and S., Syst. II, 154; Britt., Jour. Mic. Soc. N. Y. V, 104; Hart., Fl. Scand. I, 449.

Northern hemisphere to N. W. India and Mexico.

North America: N. S., Hudson Bay and Saskatchewan; S. to N. J., Fla. and Mex.; W. to Pac. from Santa Barbara to Brit. Col.

Minn. valley: Throughout; wet places, borders of marshes and shores of lakes.

HERB.: *Taylor 1084*, Glenwood; *Sheldon 817*, Sleepy Eye; *Sheldon 161*, Madison Lake, Blue Earth Co.; *Ballard 790*, Swan lake, Carver Co.; *Ballard 281*, Jordan, Scott Co.; *Ballard 79*, Chaska; *Taylor 74*, Elysian; *MacM.* and *Sheld. 52*, Brainerd; *Bailey 150*, Vermilion lake; *Kassube 253*, Minneapolis; *Oestlund 213*, Ramsey Co.; *Sandberg 516*, Red Wing; *Sandberg 517*, Chisago Co.; *Leiberg 78*, Blue Earth Co.; *Leiberg 79*, Blue Earth Co.; *Herb. Sheld. 1848*, Minneapolis.

Heleocharis tenuis (WILLD.) SCHULTES, Mant. II, 89 (1824).

Scirpus tenuis WILLD. Enum. I, 76 (1809).

Wats. and Coult., Gray's Man. 6 ed. 575; Britt., Fl. N. J. 263; Upham, Fl. Minn. 151; Mac., Fl. Can. II, 97; Chap., Fl. S. St. 517; Cov., Fl. Ark. 230; Britt., Jour. N. Y. Micro. Soc. V, 108.

North America: N. S. to Lake Nipigon, L. Winnipeg, Assiniboia and Rockies; S. to N. J. and N. Car.; W. to Minn. and Mo.

Minn. valley: Forest district; peat bogs and marshes.

HERB.: *Taylor 29*, Elysian; *Taylor 640*, Minnesota lake; *Sandberg 515*, Center City, Chisago Co.

Heleocharis intermedia (MUHL.) SCHULTES, Mant. II, 91 (1824).

Scirpus intermedius MUHL. Gram. 31 (1817).

Wats. and Coult., Gray's Man. 6 ed. 575; Britt., Fl. N. J. 263; Up ham Fl. Minn. 157; Mac., Fl. Can. II, 96; Chap., Fl. S. St. 576; Mac., Fl. Can. II, 373; Britt., Jour. N. Y. Micro. Soc. V, 110.

North America: Ont. and N. Y. to N. J., Penn., Iowa and Minn.

Minn. valley: Reported from S. central district; peat bogs and swamps.

Heleocharis acuminata (MUHL.) NEES, LINN. IX, 294 (1835).

Scirpus acuminatus MUHL. Gram. 27 (1817).

Heleocharis compressa SULLIV. Sill. Journ. XLII, 50 (1842).

Wats. and Coult., Gray's Man. 6 ed. 576; Mac., Fl. Can. II, 96; Upham, Fl. Minn. 151; Coult., Fl. Colo. 369; Chap., Suppl. S. St. 659; Britt., Jour. Micro. Soc. N. Y. V, 108.

North America: N. Y. and Ont. to Minn., Mo., Colo.; S. to Ga. and Tenn.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; swamps and wet places.

HERB.: *Sandberg 514*, Chisago lake; *Sheldon 1847*, Ft. Snelling.

Heleocharis palustris (LINN.) R. BR. Prodr. I, 80 (1810).

Scirpus palustris LINN. Spec. 47 (1753).
S. baiothryon WAHL. Suppl. 3 (1796).
S. reptans THUILL. Fl. Par. ed. 2, I, 22 (1799).
S. varius SCHREB. in Schw. and K. Fl. Erl. 11 (1804).
Eleocharis polycaula WEND. Beitr. Hass. 19 (1823).
E. uniglumis SCHULTES, Mant. II, 88 (1824).
Scirpus melanostachys D'URV. Mal. 29 (1825).
Clavula palustris DUM. Fl. Belg. 143 (1827).
Fimbristylis melanostachya BROGN. Dup. Voy. 81 (1828).
Scirpus glaucescens MER. Fl. Par. ed. 3, 44 (1831-34).

Wats. and Coult., Gray's Man. 6 ed. 575; Webb., Fl. Neb. 99; Upham, Fl. Minn. 150; Mac., Fl. Can. II, 95; Chap., Fl. S. St. 518; Britt., Fl. N. J. 262; Coult., Fl. Colo. 369; Wats., Fl. Calif. II, 221; Richt., Pl. Eur. 142; Led., Fl. Ross. IV, 244; Hook., Fl. Gt. Brit. 441; Nym., Fl. Eur.; Trautv., Fl. Sib. 120; Herd., Fl. Eur. Russ. 138; Engl. Pax, Nat. Pflanz. II, 2, 112; Wats., King Exp. 360; Roth., Wheel. Exp. 275, 376; Cov., Fl. Ark. 229; R. and S., Syst. Veg. II, 151; Hart., Fl. Scand. I, 448.

Europe; Mediterranean region; all Asia; Malay Archipelago; Australasia.

North America: Can. throughout to Greenland, Hudson Bay and Bear lake; U. S. throughout to Fla. and Mex.

Minn. valley: Throughout; abundant; wet meadows, marshes and in shallow water.

HERB.: *Sheldon 13*, Elysian; *Sheldon 1411*, Lake Benton; *Sheldon 181*, Eagle lake, Blue Earth Co.; *Taylor 406*

Elysian; *Taylor 19,* Elysian; *Ballard 24,* Chaska; *Ballard 495,* Prior's lake, Scott Co.; *Taylor 620,* Minnesota lake; *MacM.* and *Sheld. 53,* Brainerd; *Kassube 252,* Minneapolis; *Bailey 19,* Vermilion lake; *Bailey 535,* Long lake; *Sheldon, 1620,* Ramsey Co.

Heleocharis palustris (LINN.) R. BR. var. **glaucescens** (WILLD.) GRAY, Man. ed. v, 558 (1868).

Scirpus glaucescens WILLD. Enum. 76 (1809).
Eleocharis glaucescens R. and S. Mant. II, 89 (1824).
E. calva TORR. Fl. N. Y. II, 346 (1843).

Wats. and Coult., Gray's Man. 6 ed. 575; Britt., Fl. N. J. 262; Upham, Fl. Minn. 151; Mac., Fl. Can. II, 96; Britt., Jour. Micro. Soc. N. Y. V, 103; Webb., Appx. Neb. 24.

North America: With type east of Minn. and S. of Nipigon river, also in Nebraska.

Minn. valley: Reported from N. E. district; infrequent or rare; localities with the typical form.

Heleocharis ovata (ROTH.) R. BR. Prodr. I, 80 (1810).

Scirpus capitatus SCHREB. Spic. Lips. 60 (1771).
S. compressus MOENCH, Meth. 349 (1794).
S. annuus THUILL. Fl. Par. ed. 2, I, 22 (1799).
S. ovatus ROTH. Cat. II, 5 (1800).
S. nutans BERG. Fl. Pyr. I, 43 (1803).
S. soloniensis DUB. Meth. Ort. 295 (1803).
S. turgidus PERS. Syn. I, 66 (1805).
S. multicaulis GMEL. Fl. Bad. 96 (1805).
S. obtusus WILLD. Enum. I, 76 (1809).
Eleocharis obtusa SCHULTES, Mant. II, 89 (1824).
Clavula ovata DUM. Fl. Belg. 143 (1827).
Eleogenus ovatus NEES, Linn. IX, 294 (1834).
Eleocharis diandra WRIGHT, Torr. Bull. X, 101 (1883).

Wats. and Coult., Gray's Man. 6 ed. 574; Webb., Fl. Neb. 99; Britt., Fl. N. J. 262; Mac., Fl Can. 95; Wats., Fl. Calif. II, 222; Chap., Fl. S. St. 518; Upham, Fl. Minn. 150; Richt., Pl. Eur. 143; Herd., Fl. Russ. Eur. 138; Engl. Pax, Nat. Pflanz. II, 2, 112; Mac., Fl. Can. II, 372; Cov., Fl. Ark. 229; Britt., Journ. N. Y. Micro. Soc. V, 102; R. and S., Syst. II, 152.

Central Europe, Siberia and India.

North America: N. S., N. Br., Q., Ont. to Georgian Bay and Saskatchewan; S. to N. Eng., N. J., Fla.; W. to Minn., Dak., Neb., Ark. and Tex.; Brit. Col. to Oregon, Plumas Co., Calif., and Yosemite.

Minn. valley: Forest district; infrequent; in wet places.

HERB.: *Ballard 439,* Prior's lake, Scott Co.

IRIA RICH. Pers. Syn. I, 65 (1805).

Fimbristylis VAHL, Enum. II, 285 (1806).
Abildgaardia VAHL, l. c. 296 (1806).

Mischospora BOECKL. Flora. 113 (1860).
Gussonea PRESL, Rel. Haenk. I, 183 (1830).
Pogonostylis BERTOL. Fl. Ital. I, 312 (1833).
Trichelostylis LESTIB. Ess. Fam. Cyp. 40 (1819).
Oncostylis NEES, Mart. Fl. Bras. II, 1, 80 (1829).
Leptoschoenus NEES, Hook. Journ. Bot. II, 393 (1836).
Echinolytrum DESVX. Jour. Bot. I, 20 (1808).

Benth. and Hook., *Gen. Pl.* III. 1048; Durand, *Ind. Gen. Phan.* 457; Engler and Prantl, *Nat. Pflanz.* 2, II. 113 (Pax); O. Kuntze, *Rev. Gen.* II. 751.

Living species: 200; tropical and temperate regions. Europe, 4; Russia, 2; U. S. 6-7; S. Sts., 7; Rocky mts., 1; E. Sts., 4; California, 3; Pl. King, 2; Pl. Wheel., 2.

Iria capillaris LINN. OK. Rev. Gen. II, 753 (1891).
Scirpus capillaris LINN. Spec. 49 (1753).
Isolepis capillaris R. and S. Syst. II, 118 (1817).
Scirpus muhlenbergii SPRENG. Syst. I, 207 (1825).
Fimbristylis capillaris GRAY, Man. ed. I, 530 (1848).

Wats. and Coult., Gray's Man. 6 ed. 578; Britt., Fl. N. J. 263; Upham, Fl. Minn 152; Chap., Fl. S. St. 522; Wats., Fl. Calif. II, 223; Roth., Wheel. Exp. 275; Cov., Fl. Ark. 230; Webb., Appx. Neb. 24.

Tropical and subtropical regions.

North America: N. Eng. to N. J. and Fla.; W. to Minn., Neb., Tex., Arizona, Calif. and Oregon.

Minn. valley: S. W. district; perhaps S. central and S. E. districts; sandy places.

HERB.: *Sheldon 1201*, Redstone, near New Ulm.

MARISCUS HALL. En. Stirp. Helv. 251 (1742).
Pseudocyperus SEGU. Pl. Veron, I, 115 (1745).
Cladium P. BR. Hist. Jamaic. 114 (1756).
Baumea and **Vincentia** GAUDICH. Freyc. Bot. Voy. 416, 417 (1826).
Agylla PHILIPPI, Anal. Univ. Chile, I, 643 (1885).
Terobera STEUD. Syn. Pl. Glum. II, 164 (1855).
Trasi BEAUV. Lestib. Ess. Fam. Cyp. 32 (1819).
Machaerina VAHL, Enum. II, 238 (1806).
Trachyrhynchium NEES, Herb. Meyen.
Chapelliera NEES, Linn. IX, 298 (1835).
Schoenopsis BEAUV. Lestib. Ess. Fam. Cyp. 34 (1819).

Benth. and Hook., *Gen. Pl.* III, 1065; Durand, *Ind. Gen. Phan.* 460; Engler and Prantl, *Nat. Pflanz.* 2, II, 116 (Pax); O. Kuntze, *Rev. Gen.* II, 754.

Living species: 30; tropical and temperate regions; especially Australia and New Zealand. Europe, 2; N. America, 3; California, 2; Atl. States, 2; Canada, 1.

Mariscus mariscoides (MUHL.) O. KUNTZE, Rev. Gen. II, 755 (1891).

Schoenus mariscoides MUHL. Gram. 5 (1817).
Cladium mariscoides TORR. Cyp. 372 (1836).

Wats. and Coult., Gray's Man. 6 ed. 586; Upham, Fl. Minn. 152; Britt., Fl. N. J. 268; Mac., Fl. Can. II, 107; Chap., Suppl. 660.

North America: N. S., N. Br., Q., Ont. to N. J., Del., N. Car. and Fla.; W. to S. Minn. Iowa and Ark?

Minn. valley: Reported from S. E. edge; bogs and wet meadows; doubtful.

RHYNCHOSPORA VAHL, Enum. II, 229 (1806).

Haplostylis, Morisia, Mitrospora, Diplochaeta, Cephaloschoenus, Echinoschoenus, Calyptrostylis, Ceratoschoenus, Haloschoenus, Nomochloa NEES, Linn. IX, 295, 296 (1835).

Trichochaeta, Ptilosciadium, Calyptrolepis STEUD. Syn. Glum. II, 151 *seq.* (1855).

Sphaeroschoenus NEES, Pl. Meyen. 97 (1835).

Pterotheca PRESL, Symb. Bot. I, 55 (1832).

Asteroschoenus, Ephippiorhynchium, Ptilochaeta, Nemochloa NEES, Mart. Fl. Bras. II, 1, 134, *seq.* (1829).

Spermodon, Zosterospermon BEAUV. Lestib. Ess. Fam. Cyp. 27, 28 (1819).

Pleurostachys BRONGN. Dup. Voy. Coq. Bot. 172 (1829).

Benth. and Hook., *Gen. Pl.* III, 1058; Durand, *Ind. Gen. Phan.* 459; Engler and Prantl, *Nat. Pflanz.* 2, II, 116 (Pax).

Living species: 150; tropical and subtropical regions; extending to Canada. N. America, 50; S. Sts., 45; E. Sts., 14; Canada, 4; Europe, 2; Russian Europe, 2; Russia, 2.

Rhynchospora setacea (MUHL.).

Schoenus setaceus MUHL. Gram. 6 (1817).
Rhynchospora capillacea TORR. Fl. N. Amer. I, 55 (1824).

Wats. and Coult., Gray's Man., 6 ed. 585; Britt., Fl. N. J. 267; Upham, Fl. Minn. 152; Mac , Fl. Can. II, 107.

North America: N. Vt. and Ont. to N. J. and Penn.; W. to W. N. Y. and Minn.

Minn. valley: S. central district; peat bogs and marshes.

HERB.: *Leiberg 84, 85,* Blue Earth Co.

Rhynchospora alba (LINN.) VAHL, Enum. II, 236 (1806).

Schoenus albus LINN. Spec. 51 (1753).
Mariscus albus GILIB. Exerc. Phyt. II, 512 (1792).

Wats. and Coult., Gray's Man. 6 ed. 585; Britt., Fl. N. J. 267; Upham, Fl. Minn. 152; Mac., Fl. Can. II. 107; Chap., Fl. S. St. 527: Richt., Pl. Eur. 145; Led., Fl. Ross. IV. 259; Hook., Fl. Gt. Brit. 446; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 138; Engl. Pax, Nat. Pflanz. II, 2, 116; Wats., Fl. Calif. II, 213; Cov., Fl. Ark. 230; Rothr., Alask. 457.

Northern and middle Europe; Siberia.

North America: Newf. to Hudson Bay and Alaska; S. to N. J. and Fla.; W. to N. Ind., Minn., Ark. and Oregon.

Minn. valley: Reported from S. E. and N. E. districts; rare; bogs and marshes.

HERB.: *Bailey 319*, St. Louis river.

SCLERIA BERG. K. Vet. Ac. H. Stockh. XXVI, 142 (1765).

Diaphora LOUR. Cochinch. 578 (1790).

Diplacrum R. BR. Prodr. 241 (1810).

Diploscyphum LIEBM. Mex. Halvgr. 74 (1849).

Schizolepis SCHRAD. Mart. Fl. Bras. II, 1, 186 (1829).

Sphaeropus BOECKL. Flora 89 (1873).

Hypoporum, Cylindropus NEES, Linn. IX, 303 (1835).

Trachylomia, Mastigoscleria, Chondrolomia, Hymenolytrum, Ophryoscleria NEES, Mart. Fl. Bras. II, 1, 173 *seq.* (1829).

Macrolomia SCHRAD. ex. Nees, Mart. Fl. Bras. l. c. 181 (1829).

Benth. and Hook., *Gen. Pl.* III, 1070; Durand, *Ind. Gen. Phan.* 461; Engler and Prantl, *Nat. Pflanz.* 2, II, 120 (Pax).

Living species: 100; tropical and subtropical regions, extending N. in Atl. N. America. N. America, 12–13; Canada, 2; E. Sts., 6; S. Sts., 12.

Scleria verticillata MUHL. Willd. Spec. IV, 317 (1805).

Hypoporum verticillatum NEES, Linn. IX, 303. (1835).

Wats. and Coult., Gray's Man. 6 ed. 587; Upham, Fl. Minn. 153: Britt., Fl. N. J. 268; Chap., Fl. S. St. 532; Engl. Pax, Nat. Pflanz. II, 2, 121.

North America: E. Mass. to N. J. and Fla.; W. to S. Ont., Minn., Ill. and Tex.

Minn. valley: S. central district; rare; bogs and marshes.

HERB.: *Leiberg 86, 87*, Blue Earth Co.

Scleria triglomerata MICHX. Fl. N. A. II, 168 (1803).

S. nitida WILLD. Enum. II, 350 (1809).

S. flaccida STEUD. Syn. 174 (1840).

Cladium triglomeratum NEES, Linn. IX, 301 (1835).

Trachylomia triglomerata NEES, Mart. Fl. Brazil, II. 1, 174 (1842).

Wats. and Coult., Gray's Man. 6 ed. 586; Britt., Fl. N. J. 268; Upham, Fl. Minn. 153; Chap., Fl. S. St. 531; Mac., Fl. Can. II, 108; Cov., Fl. Ark. 231; Britt., Rev. Scler., N. Y. Acad. III, 129 (1883–85).

North America: Ont., Mass. and Vt. to N J., N. Car. and Fla.; W. to Minn., Ark. and Tex.

Minn. valley: Reported from S. E. edge; infrequent; swamps and marshes.

CAREX LINN. Gen. 705 (1737).

Carex, Scuria, Triplima, Triodus RAF. Jour. Phys. LXXXIX, 106 (1819).

Maukschia, Leucoglochin, Callistachys, Genersichia, Cryptoglochin HEUFFL. Flora, 527, 528 (1844).

Pseudocarex MIQ. Ann. Mus. Lugd.-Bat. II, 146; ex B. and H. Gen. l. c.
Schelhammeria MOENCH, Meth. Suppl. 119 (1802).
Psyllophora EHRH. Beitr. IV, 146 (1789).
Vignea BEAUV. ex Schur. Transsylv. 696 (1866).
Vignantha SCHUR. ex Schur. l. c. (1866).

Benth. and Hook., *Gen. Pl.* III, 1073; Durand, *Ind. Gen. Phan.* 461; Engler and Prantl, *Nat. Pflanz.* II, 2, 122 (Pax); Schenck, *Palaeophyt.* 385.

Living species: 1000 described; 500 distinct; temperate and colder regions, and a few in tropical mts. N. America, 250±; S. Sts., 80–85; E. Sts., 135±; Rocky mts., 90–95; California, 90–100; Canada, 200; Pl. King, 58; Pl. Wheel., 41; Europe, 190-195; Russian Europe, 140; Russia, 200±.

Fossil species: ? Tertiary; France, Arctic regions (*Heer*).

Carex sychnocephala CAREY, Sill. Journ. ser. 2, IV, 24 (1847).
C. cyperoides DEW. Sill. Journ. ser. 2, III, 171 (1846) not Linn.

Wats. and Coult., Gray's Man. 6 ed. 622; Mac., Fl. Can. II, 121.

North America: Ont. to Man.; S. to central N. Y. and W. Minn.

Minn. valley: Far S. W. districts, and probably N. edge also; rare and local.

HERB.: *Sheldon 1509*, Lake Benton; *MacM.* and *Sheld. 61*, Brainerd.

Carex straminea WILLD. Schkr. Car. 49, 34 (1801).
C. straminea var. *minor* DEW. Sill. Journ. XI, 158 (1826).
C. tenera SARTW. Exsicc. 45 (1848).
C. festucacea var. *tenera* CAREY, Gray's Man. ed. 1, 545 (1848).
C. straminea var. *tenera* BOOTT, Ill. 120, 384 (1862).
C. tenera f. *erecta* OLN. Exsicc. II, 14 (1871).

Wats. and Coult., Gray's Man. 6 ed. 621; Mac., Fl. Can. II, 131; Webb., Fl. Neb. 98; Britt., Fl. N. J. 278; Coult., Fl. Colo. 397; Chap., Fl. S. St. 535; Upham, Fl. Minn. 155; Mac., Fl. Can. II, 378; Wats., King Exp. 367; Bail., Syn. Car. 149.

North America: Ont. to Man.; S. to N. Eng., N. J. and Penn.; W. to Minn., Neb., Colo., Utah and Arizona.

Minn. valley: Forest district; openings in woods and thicket edges; not infrequent.

HERB.: *Taylor 13*, Elysian; *Ballard 5a*, Zumbrota; *Kassube 262*, Minneapolis.

Carex straminea WILLD. var. **brevior** DEW. Sill. Journ. XI, 158 (1826).
C. festucacea WILLD. Spec. IV, 242 (1805).
C. straminea SCHKR. Car. Nachtr. 23, 174 (1806).
C. straminea var. *schkuhrii* GAY, Ann. Sci. Nat. 2, X, 363 (1838).
C. straminea var. *festucacea* TUCKM. Enum. 18 (1843).

C. straminea, *typica* and vars. *crawei* and *meadii* BOOTT, Ill. 121 (1862).

C. foenea BOOTT, Ill. 118, 376 (1862).

C. straminea vars. *hyalina* and *typica* GRAY, Man. ed. 5, 580–581 (1868).

C. tenera var. *suberecta* OLN. Exsicc. II, 13 (1871).

Wats. and Coult., Gray's Man. 6 ed. 622: Mac., Fl. Can. II, 131; Chap., Fl. S. St. 535: Upham, Fl. Minn. 155; Mac., Fl. Can. II, 378; Webb., Appx. Neb. 23.

North America: N. S., Ont. to Man.; S. to N. J. and Va.; W. to Colo., Neb., Minn. and Dak.

Minn. valley: Forest district; infrequent; openings and thickets.

HERB.: *Taylor 336*, Janesville; *Herb. Sheld. 1932*, Hennepin Co.

Carex straminea WILLD. var. **mirabilis** (DEW.) TUCKM. Enum. Meth. 18 (1853).

C. mirabilis DEW. Sill. Journ. XXX, 63 (1836).

C. cristata var. *mirabilis* BOOTT, Ill. (1862).

C. lagopodioides var. *mirabilis* OLN. Exsicc. (1871).

Wats. and Coult., Gray's Man. 6 ed. 621; Coult., Fl. Colo. 396; Britt., Fl. N. J. 278; Mac., Fl. Can. II, 130; Webb., Fl. Neb. 98; Wats., Fl. Calif. II, 238 (?): Upham, Suppl. Minn. 86; Bail., Syn. Car. 150.

North America: Ont. to Man. and E. U. S. throughout; Yosemite valley ?

Minn. valley: Forest district; abundant; openings and edges of thickets.

HERB.: *Ballard 434*, Prior's lake, Scott Co.; *Taylor 734*, Glenwood; *Ballard 28*, Chaska; *Ballard 220*, Jordan, Scott Co.; *Ballard 847*, Page lake, Carver Co.; *Bailey 41*, Vermilion lake.

Carex foenea WILLD. Enum. 957 (1809).

C. adusta Auct. Amer. Vet.

C. argyrantha TUCKM. Herb. Dietr. (1859).

C. albolutescens SCHWEIN. var. *argyrantha* OLN. Exsicc. I, 9 (1871).

C. adusta var. *argyrantha* BAIL. Cat. Car. (1884).

Wats. and Coult., Gray's Man. 6 ed. 621; Britt., Fl. N. J. 278: Mac., Fl. Can. II, 129; Wats., Fl. Calif. II, 238 (?); Bail., Typ. Car. 25; Upham, Fl. Minn. 155; Mac., Fl. Can. II, 377; Bail., Syn. Car. 150.

North America: N. Eng., Penn., N. J. to Mich., Minn., Man. and Brit. Col.

Minn. valley: Reported from N. E. districts; rare; rocky or sandy woodland.

Carex adusta BOOTT, Hook. Fl. Bor.-Am. II, 215 (1840).

C. albolutescens SCHWEIN. var. *glomerata* OLN. Exsicc. V, 10 (1871).

C. adusta var. *glomerata* BAIL. Car. Mon. 149 (1886).

C. pinguis BAIL. Bull. 3, G. and N. H. Surv. Minn. 22 (1887).

Wats. and Coult., Gray's Man. 6 ed. 621; Mac., Fl. Can. II, 129; Britt., Fl. N. J 278; Coult., Fl. Colo. 397; Wats., Fl. Calif. II, 238; Bail., Typ. Car. 24; Upham, Fl. Minn. 155; Roth., Wheel. Exp. 277; Bail., Syn. Car. 148.

North America: N. Br., Maine, Mich., Minn., N. W. T. to Brit. Col., Rocky mts. and 57° N. lat.; S. to N. J.

Minn. valley: N. E. district, and perhaps forest district throughout; copses, thickets and barren or rocky woodland.

HERB.: *Bailey 6,* Vermilion lake; *Bailey 530,* Agate bay; *Bailey 325,* St. Louis river; *Bailey 7,* Vermilion; *Bailey 464,* Agate bay; *Bailey 526,* Agate bay; *Bailey 283,* St. Louis river; *Bailey 558,* Mud lake; *Kassube 261,* Minneapolis.

Carex scoparia SCHKR. Car. Nachtr. (1801).

C. leporina MICHX. Fl. N. Am. I, 170 (1803).

C. scoparia var *minor* BOOTT. Ill. 116 (1858).

C. lagopodioides var. *scoparia* BOECK. Linn. XXXIX, 114 (1875).

Wats. and Coult., Gray's Man. 6 ed. 620; Britt., Fl. N. J. 278; Coult., Fl. Colo. 396; Chap., Fl. S. St. 535; Bail., Typ. Car. 62; Upham, Fl. Minn., 155; Wats., Fl. Calif. II, 237 in var ; Bail., Syn. Car. 148.

North America: Newf., N. S., N. Br., Q., Ont. to Saskatchewan and L. Athabasca; S. to N. Eng., N. J. and S. Car.; W. to Iowa, Minn. and Mo.

Minn. valley: Throughout; principally in forest district; meadows and damp fields.

HERB.: *Sheldon 1199,* New Ulm; *Ballard 548,* Spring lake, Scott Co.; *Taylor 523,* Mud lake, Waseca Co. (var. *minor* Boott); *Bailey 126,* Vermilion; *Bailey 301,* St. Louis river; *Bailey 492,* Agate bay; *Bailey 60,* Vermilion lake; *Bailey 8,* Vermilion lake.

Carex tribuloides WAHL. K. Acad. Handl. XXIV, 145 (1803).

C. lagopodioides SCHKR. Nachtr. 20 (1806).

C. scoparia var. *lagopodioides* TORR. Cyp. 394 (1836).

C. lagopodioides var. *composita* OLN. Exsicc. II, 10 (1871).

Wats. and Coult., Gray's Man. 6 ed. 620; Chap., Fl. S. St. 535; Mac., Fl. Can. II, 130; Wats., Fl. Calif. II, 237; Coult., Fl. Colo. 396; Bail., Typ. Car. 54; Webb., Fl. Neb. 98 in var.; Upham, Fl. Minn. 155; Cov., Fl. Ark. 231; Bail., Syn. Car. 148.

North America: N. Br., Q., Ont. to Saskatchewan; S. to N. Y., N. Eng., Penn., N. J. and mts. of N. Car.; W. to Minn. and Dak.; S. in Rockies to N. Mex.

Minn. valley: Forest district, especially eastward; damp, shady places.

HERB.: *Ballard 16a,* Zumbrota; *Ballard 2a,* Zumbrota; *Bailey 270,* Vermilion lake; *Bailey 92,* Vermilion lake; *Bailey*

35, Vermilion lake; *Bailey 418*, Long lake; *Bailey 525*, Agate bay; *Bailey 184*, Vermilion lake (all in var. *reducta* Bail.).

Carex tribuloides WAHL. var. **cristata** (SCHWEIN.) BAIL. Syn. Car. 148 (1886).

C. cristata SCHWEIN. Ann. N. Y. Lyc. 66 (1824).
C. straminea var. *cristata* TUCKM. Enum. Meth. 18 (1843).
C. lagopodioides var. *cristata* Carey, Gray's Man. ed. 1, 545 (1848).

Wats. and Coult., Gray's Man. 6 ed. 620; Bail., Typ. Car. 55; Mac., Fl. Can. II, 130; Upham, Fl. Minn. 155; Britt., Fl. N. J. 278; Wats., Fl. Calif. II, 238; Coult., Fl. Colo. 396; Bail., Syn. Car. 148; Webb., Appx. Neb. 23.

North America: N. S., N. Br., Ont. to S. Man.; S. to Penn. and N. J.; W. to Minn. and E. Wyoming.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; wet meadows and damp fields.

HERB.: *Ballard 218*, Jordan, Scott Co. (var. *reducta* Bail.); *Taylor 121*, Janesville; *Sheldon 333*, Smith's mill, Blue Earth Co.; *Ballard 433*, Prior's lake, Scott Co. (all var. *reducta* Bail.); *Bailey 259*, Vermilion lake; *Sandberg 538*, Red Wing.

Carex tribuloides WAHL. var. **bebbii** (OLN.) BAIL. Typ. Car. 55 (1889).

C. bebbii OLN. Exsicc. II, 12 (1870).
C. cristata UPHAM, Fl. Minn. 155 (1884) in part.

Wats. and Coult., Gray's Man. 6 ed. 620; Webb., Fl. Neb. 98; Mac., Fl. Can. II, 130; Britt., Fl. N. J. 278?

North America: Ont. to Man.; S. to N. Eng., N. Y., N. J.(?); W. to Minn., Dak. and Neb.

Minn. valley: S. central district; local or infrequent; habitat with the typical form.

Carex muskingumensis SCHWEIN. An. Tab. (1823).

C. scoparia var. *muskingumensis* SCHWEIN. An. Tab. (1823).
C. arida SCHWEIN. and TORR. Car. Mon. 312 (1824).

Wats. and Coult., Gray's Man. 6 ed. 620; Mac., Fl. Can. II, 129; Bail., Typ. Car. 71; Upham, Fl. Minn. 155.

North America: Man. to Minn., Wisc., Ill., Mich. and Ohio.

Minn. valley: N. E. district; infrequent; wet and marshy meadows.

HERB.: *Sandberg 537*, Center City.

Carex siccata DEW. Sill. Journ. X. 278 (1826).

C. pallida C. A. MEY. Cyp. Nov 21 (1830).
C. liddoni CAREY, Gray's Man. ed. 1, 545 (1848).

Wats. and Coult., Gray's Man. 6 ed. 619; Mac., Fl. Can. II, 114; Coult., Fl. Colo. 392; Wats., Fl. Calif. II, 230; Upham, Fl. Minn. 153; Wats., King Exp. 363; Roth., Wheel. Exp. 276; Engl. Pax, Nat. Pflanz. II, 2, 124; Bail., Syn. Car. 147; Led., Fl. Ross. IV.

North-eastern Asia.

North America: Ont. to L. Superior region, Man., Saskatchewan, N. W. T., Brit. Col. and Rocky mts.; S. to N. Eng.; W. to Ohio, Mich. and Minn.; Colo., Sacramento valley and Columbia river region.

Minn. valley: Reported from forest district; rare; dry and sandy places.

Carex deweyana SCHWEIN. An. Tab. (1823).

C. remota RICH. Appx. Frankl. (1823) not Linn.

Wats and Coult., Gray's Man. 6 ed. 619; Coult., Fl. Colo. 394; Mac., Fl. Can. II, 124; Wats., Fl. Calif. II, 236; Bail., Typ. Car. 71; Upham, Fl. Minn. 155; Bail., Syn. Car. 146.

North America: N. Br., Q., Ont. to Man. and Brit. Col. and Rocky mts.; S. to Colo., Calif. and N. Mex.

Minn. valley: Forest district; thickets, dry woodland and river banks.

HERB.: *Bailey 37*, Vermilion lake.

Carex trisperma DEW. Sill. Journ. IX, 63 (1825).

Wats. and Coult., Gray's Man. 6 ed. 619; Mac., Fl. Can. II, 122: Britt., Fl. N. J. 278; Webb., Fl. Neb. 98; Upham, Fl. Minn. 154; Chap., Suppl. S. St. 660; Bail., Syn. Car. 144.

North America: N. S., Q., Ont. to L. Superior and Rocky mts.; S. to N. Eng., N. J., Penn. and N. Car.; W., around Gt. Lakes, to Iowa and Minn.

Minn. valley: Reported from N. E. district; cold swamps and bogs.

HERB.: *Juni 21*, Put In-Bay; *Bailey 91*, Vermilion.

Carex tenuiflora WAHL. Act. Holm. 146 (1803).

Wats. and Coult., Gray's Man. 6 ed. 619; Upham, Fl. Minn. 154; Mac., Fl. Can. II, 122; Richt., Pl. Eur. 151; Herd., Fl. Eur. Russ. 146; Bail., Syn. Car. 145; Hart., Fl. Scand. I, 473.

N. Europe and Siberia.

North America: N. Br. to S. Man.; S. to N. N. Eng. and S. Minn.

Minn. valley: N. E. district; swamps and cold bogs.

HERB.: *Bailey 281*, St. Louis river; *Sandberg 532*, Chisago Co.; *Herrick 335*, Minneapolis.

Carex canescens LINN. Spec. 974 (1753).

C. brizoides HUDS. Fl. Angl. 406 (1762).
C. elongata LEERS. Fl. Herb. 14 (1775).
C. cinerea PALL. Pl. Palat. II, 571 (1777).
C. richardii THUILL. Fl. Par. 482 (1790).
C. curta GOODEN. Trans. Linn. Soc. II, 145 (1792).
Vignea canescens REICH. Fl. Exc. 58 (1830).

V. persooni SCHUR. Verh. S. V. III, 169 (1852).

Carex vitilis var. *pallida* OLN. King Exp. V, 364 (1871).

Wats. and Coult., Gray's Man. 6 ed. 618; Mac., Fl. Can. II, 123; Chap., Fl. S. St. 535; Coult., Fl. Colo. 394; Bail., Typ. Car. 64; Wats., Fl. Calif. II, 236; Britt., Fl. N. J. 278; Upham, Fl. Minn. 154; Richt., Pl. Eur. 151; Herd., Fl. Eur. Russ. 140; Hook., Fl. Gt. Brit. 452; Roth., Wheel. Exp. 278; Engl. Pax, Nat. Pflanz. II, 2, 124; Bail., Syn. Car. 143; Rothr., Alask. 457.

Europe; N. Asia; S. Chile.

North America: Greenland, Hudson Bay, Mackenzie valley to Sitka, Alaska; S. to N. Eng., Penn., N. J.; W. to Minn. and Colo.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; marshes and wet meadows.

HERB.: *Sandberg 533*, Center City.

Carex echinata MURR. var. **radiata** (WAHL.) B. S. P. Cal. N. Y. (1888).

Carex stellulata var. *radiata* WAHL. K. Acad. Handl. XXIV, 147 (1803).

C. scirpoides SCHKR. Car. 19 (1805).

C. sterilis WILLD. Spec. IV, 208 (1805).

C. sterilis vars. *B.* and *G.* TORR. Cyp. 392 (1836).

C. stellulata vars. *scirpoides* and *angustata* CAREY, Gray'sMan. ed. I, 544 (1848).

C. echinata var. *microstachys* BOECK. Linn. XXXIX, 125 (1875).

C. echinata and var. *microcarpa* UPHAM, Fl. Minn. 155 (1884).

C. echinata var. *microcarpa* BAIL. Coult. Fl. Colo. 395 (1885).

C. echinata var. *angustata* BAIL. Car. Cat. (1884).

Wats. and Coult., Gray's Man. 6 ed. 618; Mac., Fl. Can. II, 126; Wats., Fl. Calif. II, 237; Bail., Typ. Car. 58; Britt., Fl. N. J. 277; Coult., Fl. Colo. 395; Bail. Syn. Car. 58; Upham, Fl. Minn. 155; Roth., Wheel. Exp, 277; Cov., Fl., Ark. 237; Engl. Pax, Nat. Pflanz. II, 2, 124.

North America: N. S., N. Br., Q., Ont. to Sitka, Alaska; S. to N. Y., N. J., Penn. and Fla.; W to Oregon and Colo.

Minn. valley: Forest district; marshes and wet places, or swamps.

HERB.: *Ballard 153*, Chaska, Carver Co.; *Sandberg 536*, Center City; *Bailey 482*, Agate Bay.

Carex cephalophora MUHL. Willd. Spec. IV (1805).

Wats. and Coult., Gray's Man. 6 ed. 617; Mac., Fl. Can. II, 118; Bail., Typ. Car. 61; Chap., Fl. S. St. 534; Coult., Fl. Colo. 389; Upham, Fl. Minn. 154; Britt., Fl. N. J. 277; Cov., Fl. Ark. 231; Engl. Pax, Nat. Pflanz. II, 2, 123; Bail., Syn. Car. 141.

North America: Ont., N. Y., N. J., to Fla.; W. to Minn., Iowa, Mo., Ark. Ind. Terr. and Mex.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; woods and fields.

HERB.: *Sandberg 528,* Minneapolis; *Herrick 324,* Minneapolis.

Carex muhlenbergii SCHKR. Nachtr. XII, 178 (1806).

C. pinetorum SCHLECHT. Linn. X, 265 (1836).

Wats. and Coult., Gray's Man. 6 ed. 617; Coult., Fl. Colo. 389; Mac., Fl. Can. II, 118; Chap., Fl. S. St. 534; Bail., Typ. Car. 62; Upham, Fl. Minn. 154; Britt., Fl. N. J. 277; Cov., Fl. Ark. 231; Bail., Syn. Car. 140; Webb., Appx. Neb. 23.

North America: Ont. to Hudson Bay; S. to N. Y., N. J., Penn. and S. Car.; W. to Minn., Dak. and Neb.

Minn. valley: Reported from N. E. district; rare or doubtful; fields and meadows.

Carex rosea SCHKR. Nachtr. XV, 179 (1806).

Wats. and Coult., Gray's Man. 6 ed. 616; Webb., Fl. Neb. 98; Mac., Fl. Can. II, 119; Britt., Fl. N. J. 276; Upham, Fl. Minn. 154: Bail., Typ. Car. 62, 69; Chap., Fl. S. St. 534; Coult., Fl. Colo. 389; Cov., Fl. Ark. 231; Bail., Syn. Car. 139.

North America: Newf., N. S., N. Br., Q., Ont., Owen Sound and Man.; S. to N. Y., N. J. and N. Ga.; W. to Minn., Neb. and Ind. Terr.?

Minn. valley: Forest district; perhaps westward; moist woodland and wet fields.

HERB.: *Sheldon 145,* Madison Lake; *Taylor 147,* Janesville; *Taylor 202,* Janesville; *Ballard 6,* Chaska; *Ballard 7a,* Goodhue Co.; *Sandberg 529,* Center City; *Kassube 259,* Minneapolis; *Herb. Sheld. 1930,* Hennepin Co.

Carex rosea SCHKR. var. **radiata** DEWEY. Sill. Journ. X, 276 (1826).

C. neglecta TUCKM. Enum. Meth. 19 (1843).

C. rosea var. *minor* BOOTT, Ill. 81 (1858).

Wats. and Coult., Gray's Man. 6 ed. 615; Mac., Fl. Can. II, 119; Coult., Fl. Colo. 389; Britt., Fl. N. J. 276; Chap., Fl. S. St. 534; Upham, Suppl. Minn. 86.

North America: Ranges with the type and to Ind. Terr., and Mexico.

Minn. valley: Reported from S. E. and S. central district; habitat with the typical form.

Carex tenella SCHKR. Car. I, 23 (1801).

C. disperma DEW. Sill. Journ. VIII, 266 (1824).

C. blytii NYL. Spic. Fenn. II, 35 (1843-46).

C. gracilis GRAY, Sill. Journ. IV, 22 (1847).

Wats. and Coult., Gray's Man. 6 ed. 616; Mac., Fl. Can. II, 121; Coult., Fl. Colo. 389; Wats., Fl. Calif. II, 235; Britt., Fl. N. J. 276; Upham, Fl. Minn. 154; Herd., Fl. Eur. Russ. 146; Nym., Fl. Eur.; Richt. Pl. Eur. 151; Wats., King Exp. 364; Roth., Wheel. Exp. 277; Bail., Syn. Car. 139; Hart., Fl. Scand. I, 473.

Northern Europe.

North America: Atl. to Pac in Can., and N. to lat. 56° on Peace river; S. to N. Eng., Penn. and N. J.; W. to Oregon, Utah and N. Mex.

Minn. valley: Forest district; swamps, and cold peat bogs.

HERB.: *Ballard 152,* Chaska, Carver Co.; *Bailey 30,* Vermilion lake; *Kassube 260,* Minneapolis.

Carex sartwellii DEW. Sill. Journ. XLIII, 90 (1868).

C. intermedia DEW. Sill. Journ. IV, 343 (1847) in part.
C. disticha SARTW. Exsicc. 71 (1848).
C. disticha var. *sartwellii* DEW. Sill. Journ, XLI, 330 (1866).

Wats. and Coult., Gray's Man. 6 ed. 615; Mac., Fl. Can. II, 114; Wats., Fl. Calif. II, 230; Bail., Typ. Car. 8; Coult., Fl. Colo. 392; Upham, Fl. Minn. 153; Herd., Fl. Eur. Russ. 138 ?; Mac., Fl. Can. II, 373; Wats., King Exp. 362; Bail., Syn Car. 137; Webb., Appx. Neb. 23.

N. E. Asia?

North America: Newf,, Ont., C. N. Y. to Minn., Saskatchewan, Brit. Col, and Rockies; S. to Utah and Colo.

Minn. valley: N. E. districts; rare or local; dry or waste places and prairies or openings in forest,

HERB.: *? Kassube 257,* Minneapolis,

Carex vulpinoidea MICHX. Fl. N. Am. I, 69 (1803).

C. multiflora MUHL. Willd. Spec. V, (1805).
C. bracteosa SCHRW. An. Tab. (1823).
C. setacea DEW. Sill. Journ. IX, 61 (1825).
C. multiflora var. *microsperma* DEW. Sill. Journ. XI, 317 (1826).
C. vulpinaeformis TUCKM. Enum. Meth. 9 (1843).
C. scabrior SARTW. Dew., Sill. Journ. VIII, 349 (1849).

Wats. and Coult., Gray's Man. 6 ed. 615; Britt., Fl. N. J. 276; Webb., Fl. Neb. 98; Bail., Typ. Car. 61; Mac., Fl. Can. II, 115; Upham, Fl. Minn. 153: Coult., Fl. Colo. 392; Roth., Wheel. Exp. 277; Cov., Fl. Ark. 232; Bail., Syn. Car. 136.

North America: N. Br., Q., Ont. to Nelson river valley; S. to Minn., Iowa, Neb., Colo., Ark., and E. to N. Eng., Penn. and N. J.

Minn. valley: Throughout; low meadows; abundant.

HERB.: *Taylor 515,* Mud lake, Waseca Co.; *Taylor 681,* Glenwood; *Taylor 381,* Janesville; *Sheldon 1308,* Lake Benton; *Ballard 219,* Jordan, Scott Co.; *Ballard 14a,* Goodhue Co.; *Juni 19,* Minneapolis; *Sandberg 524,* Chisago Co.; *Sandberg 525,* Red Wing.

Carex gravida BAIL. Typ. Car. 5 (1889).

C. cephaloidea SARTW. Exsicc. 75 (1848).

Wats. and Coult., Gray's Man. 6 ed. 615; Mac., Fl. Can. II, 118; Webb., Fl. Neb. 98; Coult., Fl. Colo. 390; Upham, Fl. Minn. 154.

North America: Ont. to N. Ill., Iowa, S. Minn and Dak. and E. Neb. and Wyoming.

Minn. valley: Forest district; low meadows and fields.

HERB.; *Taylor 169*, Janesville.

Carex gravida BAIL. var. **laxifolia** BAIL. Typ. Car. 6 (1889).

Webb., Appx. Neb. 23; Wats. and Coult., Gray's Man. ed. 6, 615.

Minn. valley: Forest district; low, wet meadows and moist fields.

HERB.: *Taylor 514*, Mud lake, Waseca Co.; *Taylor 504*, Minnesota Lake.

Carex teretiuscula GOODEN. Trans. Linn. Soc. II, 163 (1794).

C. diandra SCHKR. Baier. Fl. 281 (1789).

C. paniculata var. *teretiuscula* WAHL. Konigl. Acad. Handl. XXIV. 140 (1803).

Vignea teretiuscula REICH. Fl. Exc. 60 (1830).

Carex teretiuscula var. *major* KOCH, Fl. Germ. 867 (1837).

Wats. and Coult., Gray's Man. 6 ed. 614; Mac., Fl. Can. II, 116; Britt., Fl. N. J. 276; Upham, Fl Minn. 153; Herd., Fl. Eur. Russ. 140; Richt., Pl. Eur. 150; Trautv. Fl. Sib. 124; Led., Fl. Ross. IV. 76; Hook., Fl. Gt. Brit. 450; Engl. Pax, Nat. Pflanz. II, 2, 124; Bail., Syn. Car. 136; Hart., Fl. Scand. I, 478.

Middle and Northern Europe; Asia to Himalaya mts.; N. Zealand.

North America: N. S., N. Br., Q., Ont., Man., Saskatchewan, Brit. Col. to Vancouver; S. to N. Eng., N. J., Penn.; W. to Minn. and Dak.

Minn. valley: Forest district, not infrequent; swamps and marshes.

HERB.: *Taylor 86*, Lake Custin, Le Sueur Co.; *Sandberg 523*, Goodhue Co.

Carex teretiuscula GOODEN. var. **ramosa** BOOTT, Ill. 145 (1858).

C. paradoxa BOOTT, Hook. Fl. II, 213 (1840).

C. prairea DEW. Wood's Bot. 750 (1861).

Wats. and Coult., Gray's Man. 6 ed. 615; Mac., Fl. Can. IV, 116; Upham, Fl. Minn. 153; Bail., Syn. Car. 136.

North America: N. Y. to Minn., Saskatchewan, Dak., Man., L. Athabasca, Rocky. mts., valley of the Columbia and Vancouver.

Minn. valley: Reported from S. and S. E. districts; infrequent; wet places, swamps or marshes.

Carex crus-corvi SHUTTLEW. Kunze, Riedgr. Suppl. 128 (1850).

C. siccaeformis BOOTT, Jour. Bost. Nat. Hist. Soc. V, 113 (1847).
C. halei DEWEY, Sill. Journ. Ser. 2, II, 248 (1846).

Wats. and Coult., Gray's Man. 6 ed. 614; Bail., Typ. Car. 72; Chap., Fl. S. St. 533; Webb., Fl. Neb. 98; Coult., Fl. Colo. 391; Upham, Fl. Minn. 153; Engl. Pax, Nat. Pflanz. II, 2, 124; Bail., Syn. Car. 135.

North America: S. Minn. to Neb., Ind. Terr. and Mex.; E. to Ky., Tenn. and W. Fla.

Minn. valley: S. E. and S. central district; swamps and springs in forest.

HERB.: *Sandberg 526*, Red Wing.

Carex stipata MUHL. Cat. (1805).

C. vulpinoidea TORR. Fl. N. Amer. (1836).
C. stipata var. *maxima* CHAP. Fl. S. St. 533 (1861).
C. crus-corvi SOMM. Cat. N. S. Pl. (? 1872).

Wats. and Coult., Gray's Man. 6 ed. 614; Mac., Fl. Can. II, 117; Bail., Typ. Car. 61, 62; Coult., Fl. Colo. 391; Britt., Fl. N. J. 276; Chap., Fl. S. St. 533; Upham, Fl. Minn. 153; Wats., King Exp. 362; Cov., Fl. Ark. 231; Bail., Syn. Car. 135; Webb., Appx. Neb. 23.

North America: Newf., N. S., N. Br., Q., Ont., Man., Saskatchewan, Brit. Col., Vancouver; S. in Rockies to Tex. and Mex.; N. Eng., N. J., Penn. to Fla. and Miss.; W. to Minn., Dak., Neb. and Mont.

Minn. valley: Forest district; abundant; low meadows and fields.

HERB.: *Taylor 132*, Lake Elysian; *Ballard 5*, Chaska; *Sheldon 105a*, Elysian; *Taylor 21*, Elysian; *Taylor 161*, Janesville; *Ballard 11a*, Zumbrota; *Sandberg 527*, Center City, Chisago Co.; *Bailey 621*, Agate Bay.

Carex conjuncta BOOTT, Ill. Car. 122 (1862).

C. vulpina CAREY, Gray's Man. ed. I, 512 (1848).

Wats. and Coult., Gray's Man. 6 ed. 614; Upham, Fl. Minn. 153; Bail., Syn. Car. 134.

North America: N. J. and Ky. to Minn. and Mo.

Minn. valley: N. E. district; local; low meadows or fields.

HERB.: *? Kassube 258*, Minneapolis.

Carex stenophylla WAHL. Act. Holm. 142 (1801).

C. juncifolia HOST. Syn. 504 (1797).
C. glomerata HOST. Gram. I, 32 (1801).
C. hostii SCHKR. Car. I, 26 (1801).
Vignea stenophylla REICH. Fl. Exc. 56 (1830).
Carex duriuscula C. A. MEY. Cyp. Nov. 214 (1831).
C. pachystylis GAY, Ann. Sci. Nat. 2 ser. X, 301 (1838).
C. deinbolliana GAY, Ann. Sci. Nat. 2 ser. XI, 183 (1839).

Wats. and Coult., Gray's Man. 6 ed. 614; Mac., Fl. Can. II. 120; Webb., Fl. Neb. 98; Coult., Fl. Colo. 391; Upham, Suppl. Minn. 49; Herd., Fl. Eur. Russ. 138; Richt., Pl. Eur. 148; Roth., Wheel. Exp. 277; Bail., Syn. Car. 133.

Europe (region of the Caucasus mts. and the Carpathians).

North America: Colo. to N. Mex.; E. to Neb., Iowa; N. to Minn., Saskatchewan and Rocky mts. in Peace river valley region.

Minn. valley: Reported from S. and N. W. districts; wet prairies.

Carex chordorhiza EHRH. Linn. f. Suppl. 414 (1781).

C. funiformis CLAIRV. Man. 287 (1811).

Vignea chordorhiza REICH. Fl. Exc. 56 (1830).

Carex fulvicoma DEW. Sill. Journ. XXIX, 249 (1836).

C. chordorhiza var. *genuina* TRAUTV. Act. Hort. Petr. V, 123 (1877).

Wats. and Coult., Gray's Man. 6 ed. 614; Mac., Fl. Can. II, 120; Upham, Fl. Minn. 154; Herd. Fl. Eur. Russ. 138; Richt., Pl. Eur. 148; Trautv. Fl. Sib. 123; Led., Fl. Ross. IV, 271; Engl. Pax, Nat. Pflanz. II, 2, 123; Bail., Syn. Car. 133; Hart., Fl. Scand. I, 477.

Europe and Russian Empire.

North America: Anticosti, N. Br., Q., Ont. to Man., Saskatchewan, Brit. Col., lat. 54° N. and Hudson Bay; S. to Vt. and W. to Minn. and Iowa.

Minn. valley: Forest district; rare; bogs and springs.

HERB.: *Sandberg 530*, Red Wing.

Carex polytrichoides MUHL. Willd. Spec. II, 4 (1802).

C. leptalea WAHL. K. Acad. Handl. XXIV, 139 (1803).

C. microstachya MICHX. Fl. N. Am. II, 169 (1803).

Wats. and Coult., Gray's Man. 6 ed. 613; Britt., Fl. N. J. 276; Bail., Typ. Car. 61, 64; Bail., Syn. Car. 131; Chap., Fl. S. St. 536; Coult., Fl. Colo. 378; Mac., Fl. Can. II, 111; Upham, Fl. Minn. 153; Roth., Wheel. Exp. 276.

North America: Newf., N. S., N. Br., Q., Ont., Man. to Selkirk mts. and Brit. Col. to Vancouver; N. to Hudson Bay; S. to Minn., Col.; E. to N. Eng., N. J. and Fla.

Minn. valley: N. E. districts and N. edge; rare; low grounds and marshes.

HERB.: *Juni 18*, Little Marais; *Bailey 316*, Vermilion lake; *Bailey 29*, Vermilion lake.

Carex pubescens MUHL. Willd. Spec. IV, 28 (1805).

Wats. and Coult., Gray's Man. 6 ed. 613; Bail., Typ. Car. 61; Mac., Fl. Can. II, 161; Britt., Fl. N. J. 276; Upham, Fl. Minn. 157; Coult., Fl. Colo. 377; Bail., Syn. Car. 127.

North America: Newf., N. Br., Ont. to N. Eng., N. J., Ky., and W. to Minn., Dak. and Mo.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; damp woods and openings; meadows or hills.

HERB.: *Kassube 267*, Ramsey Co.

Carex pennsylvanica LAM. Enc. Meth. III (1789).

C. marginata MUHL. Willd. Spec. IV, 261 (1805).
C. lucorum WILLD. Hort. Berol. Suppl. 63 (1809)

Wats. and Coult., Gray's Man. 6 ed. 612; Bail., Typ. Car. 61, 62; Mac., Fl. Can. II, 158; Britt., Fl. N. J. 275; Wats., Fl. Calf. II, 246; Chap. Fl. S. St. 539; Coult., Fl. Colo. 374; Upham, Fl. Minn. 157; Bail., Syn. Car. 122; Webb., Appx. Neb. 23.

North America: N. Br., Q., Ont. to Man., Brit. Col. and Vancouver; S. to N. Eng., N. J. and Ga.; W. to Minn., Dak. and Mo.; S. to Colo. in mts. and to California (?).

Minn. valley: Forest district; common; dry woods and thickets; hillsides and meadows

HERB.: *Sheldon 55*, Hennepin Co.; *Sheldon 1619*, Minneapolis; *Ballard 17a*, Zumbrota; *Kassube 265*, Minneapolis.

Carex varia MUHL. Wahl. K.Acad.Handl. XXIV, 159 (1803).

C. alpestris DEW. Sill. Journ. VII, 268 (1824).
C. davisii DEW. l. c. X, 279 (1826).
C albicans "WILLD. in herb." Spreng. Syst. Veg. III, 818 (1826).
C. emmonsii DEW. Torr., Mon. Car. 411 (1836).
C. novae-angliae var. *emmonsii* CAREY, Gray's Man. ed. 1, 556 (1848).
C. lucorum var. *emmonsii* CHAP. Fl. S. St. 539 (1860).
C. emmonsii var. *elliptica* BOOTT, Ill. 97, 287 (1860).

Wats. and Coult., Gray's Man. 6 ed. 611; Britt., Fl. N. J. 275; Bail., Typ. Car. 40; Chap., Fl. S. St. 539; Mac., Fl. Can. II, 159; Coult., Fl. Colo. 375; Mac., Fl. Can. II, 384; Cov., Fl. Ark. 232; Bail., Syn. Car. 123.

North America: N. S., N. Br., Q., Ont. to lat. 55° N., Brit. Col.; S. to N. Car. and Fla.; W. to Minn., Mo. and Ind. Terr.

Minn. valley: Forest district; S. central section; wooded hills and thicket edges.

Carex pedunculata MUHL. Willd. Spec. IV (1805).

Wats. and Coult., Gray's Man. 6 ed. 610; Mac., Fl. Can. II, 157; Bail., Typ. Car. 61; Britt., Fl. N. J. 275; Upham, Fl. Minn. 157; Bail., Syn. Car. 120.

North America: N. Br., Q., Ont. to Man. and Rocky mts.; S. to N. Eng., N. J. and Va.; W. to Minn. and Iowa.

Minn. valley: Central S. district; woods and shaded banks.

HERB.: *Leiberg 87*, Blue Earth Co.

Carex richardsoni R. BR. Appx. Frankl. Narr. 723 (1823).

Wats. and Coult., Gray's Man. 6 ed. 610; Bail., Typ. Car. 68; Mac., Fl. Can. II, 158; Wats., Fl. Calif. II, 246; Upham, Fl. Minn. 157; Coult., Fl. Colo. 376; Bail., Syn. Car. 122.

North America: Newf., Ont., lat. 54° N., Brit. Col N. W. coast of Can.; S. to W. N. Y., Ill., Minn., Mont. and Calif.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; dry fields or hillsides.

HERB.: *Kassube 266*, Minneapolis; *Sandberg 547*, Red Wing.

Carex eburnea BOOTT, Hook. Fl. Bor.-Am. II, 226 (1840).

C. alba DEW. Sill. Journ. VII, 266 (1824).
C. alba var. *setifolia* DEW. Sill. Journ. XI, 316 (1826).
C. paupercula TORR. Cyp. 415 (1836).

Wats. and Coult., Gray's Man. 6 ed. 610; Mac., Fl. Can. II, 157; Webb., Fl. Neb., 98; Upham, Fl. Minn. 157; Britt., Fl. N. J. 275; Bail., Syn. Car. 120.

North America: N. Br., Q., Ont. to Man., Rocky mts. and lat. 56° on Mackenzie river; S. to N. Eng., N. J., Penn. Ky., Ind., Minn., Iowa and Neb.

Minn. valley: Central S. district; rocky ledges

HERB.: *Leiberg 86*, Blue Earth Co.

Carex aurea NUTT. Gen. II, 205 (1818).

C. mutica R. BR. Appx. Frankl. Narr. 763 (1823).
C. pyriformis SCHWEIN. An. Tab. (1823).
C. aurea var. *androgyna* OLN. Exsicc. I, 15 (1870).
C. concinna OLN. Bot. King Exp. 372 (1871).

Wats. and Coult., Gray's Man. 6 ed. 610; Mac., Fl. Can. II, 138; Coult., Fl. Colo. 378; Upham, Fl. Minn. 156; Wats., Fl. Calif. II, 240; Wats., King Exp. 371; Roth., Wheel. Exp. 278; Bail., Syn. Car. 119; Webb., Appx. Neb. 23.

North America: Newf., N. S., N. Br., Q., Ont. to Man., Saskatchewan, Brit. Col., Pelly river, lat. 63° N.; S. to N. Eng., N. Y. and Penn.; W. to Minn., Dak. and Colo.; S. in Rockies to Arizona and N. Mex., in Sierras to California, Utah and Nevada.

Minn. valley: N. E. district; wet banks and grassy places along streams and around ponds.

HERB.: *Holway 30*, Vermilion lake; *Oestlund 218*, Minneapolis.

Carex tetanica SCHKUHR, var. **meadii** (DEW.) BAIL. Syn. Car. 118 (1886).

C. meadii DEW. Sill. Journ. XLIII, 90 (1842).
C. panicea var. *meadii* OLN. Exsicc. I, 24 (1870).
C. panicea var. *canbyi* OLN. Exsicc. II, 24 (1871).

Wats. and Coult., Gray's Man. 6 ed. 609; Mac., Fl. Can. II, 152; Upham, Fl. Minn. 156; Coult., Fl. Colo. 379; Webb., Fl. Neb. 98.

North America: R. I. to Minn. and Assiniboia; S. to Neb. and Colo. to Tex.

Minn. valley: N. E. district; woods and river banks.

HERB.: ? *Kassube 276*, Minneapolis.

Carex laxiflora LAM. Enc. Meth. III, 392 (1789).

C. striatula MICHX. Fl. N. Am. I, 173 (1803).
C. conoidea MUHL. Diss. Gram. 248 (1817).
C. anceps SCHWEIN. and TORR. Mon. 343 (1825) in part.
C. blanda DEW. Sill. Journ. X, 45 (1826).
C. anceps var. *blanda* HOOK. Fl. Bor.-Am. II, 226 (1840).
C. anceps var. *striatula* CAREY, Gray's Man. ed. 1, 554 (1848).
C. ignota DEW. Sill. Journ. VIII, 348 (1849).
C. laxiflora var. *striatula* CAREY, Gray's Man. ed. 2, 524 (1852).

Wats. and Coult., Gray's Man. 6 ed. 607; Mac., Fl. Can. II, 155; Britt., Fl. N. J. 274; Webb., Fl. Neb. 98; Upham, Fl. Minn. 157; Chap., Fl. S. St. 540; Mac., Fl. Can. II, 382; Cov., Fl. Ark. 231; Bail., Syn. Car. 114.

North America: Ont. to N. Eng., N. J. and Fla.; W. to Minn. and Mo.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; wet meadows; infrequent.

HERB.: *Sandberg 546*, Red Wing.

Carex flava LINN. Spec. 975 (1753) var. **viridula** (MICHX.) BAIL. Typ. Car. 31 (1889).

C. viridula MICHX. Fl. N. Am. II, 170 (1803).
C. irregularis SCHWEIN. An. Tab. (1823).
C. oederi SCHWEIN. and TORR. Mon. Car. 334 (1825).
? *C. demissa* HORNEM. Spreng. Syst. III, 822 (1826).

Wats. and Coult., Gray's Man. 6 ed. 606; Mac., Fl. Can. II, 140; Britt., Fl. N. J. 273; Bail., Syn. Car. 111; Upham, Fl. Minn. 158; Richt., Pl. Eur. 164 (spec.); Herd., Fl. Eur. Russ. 140 (spec.); Hook., Fl. Gt. Brit. 461 (spec.); Cov., Fl. Ark. 231; Engl. Pax, Nat. Pflanz. II, 2, 125; Hart., Fl. Scand. I, 459 (spec.).

North America: Greenland, N. S., N. Br., Q., Ont., Man. to Brit. Col., Vancouver and Hudson Bay; S. to N. Eng., Penn., N. J.; W. to Minn., Dak. and Mont.

Minn. valley: N. E. district; rare; wet places and in rocky soil.

HERB.: *MacM.* and *Sheld.*, Brainerd (var. *graminis* Bail.).

Carex crawei DEW. Torr., Bot. N. Y. II, 408 (1843).

C. heterostachya TORR. Sill. Journ. II, 248 (1846).
C. crawei var. *heterostachya* DEW. Sill. Journ. XLII, 4 (1866).

Wats. and Coult., Gray's Man. 6 ed. 606; Mac., Fl. Can. II, 153; Upham, Fl. Minn. 157; Bail., Syn. Car. 110.

North America: Anticosti, Ont., Owen Sound and Man. to N. Y., Ill. and Minn.

Minn. valley: S. central district; peat bogs and wet places in forest.

Carex granularis MUHL. Willd. Spec. V (1806).
C. chaluros STEUD. Cyp. 231 (1855).
C. haleana OLN. Exsicc. III, 14 (1871).

Wats. and Coult., Gray's Man. 6 ed. 605; Mac., Fl. Can. II, 153; Britt., Fl. N. J. 273; Chap., Fl. S. St. 540; Bail., Typ. Car. 61, 70; Bail., Syn. Car. 110.

North America: Ont., Q., to L. Nipigon and Man.; S. to N. Eng., N. J., Va., Fla.; W. to Wisc., Minn. and Mo.

Minn. valley: Forest district; not infrequent; wet fields and meadows.

HERB.: *Taylor 70,* Elysian; *Kassube 263,* Minneapolis; *Sandberg 543,* Chisago Co.

Carex grisea WAHL. K. Acad. Handl. XXIV, 154 (1802).
C. laxiflora SCHKUHR, Car. Nachtr. 69 (1805).
C. grisea var. *minor* OLN. Hall's Pl. Tex. 26 (1873).

Wats. and Coult., Gray's Man. 6 ed. 605; Mac., Fl. Can. II, 154; Webb., Fl. Neb. 98; Britt., Fl. N. J. 273; Chap., Fl. S. St. 539; Coult., Fl. Colo. 378; Bail., Typ. Car. 61, 62; Cov., Fl. Ark. 231; Bail., Syn. Car. 107.

North America: Ont. to N. Y., N. J. and Fla.; W. to 100th Mer. and in S. Utah.

Minn. valley: Forest district; low meadows and fields.

HERB.: *Ballard 339,* Jordan, Scott Co.; *Sheldon 33,* Elysian; *Taylor 128,* Lake Elysian; *Taylor 216,* Janesville; *Ballard 20a,* Goodhue Co.; *21a,* Goodhue Co.; *15a,* Goodhue Co.

Carex davisii SCHWEIN. and TORR. Mon. 326 (1825).
C. aristata DEW. Sill. Journ. VII, 277 (1824).
C. torreyana DEW. Sill. Journ. X, 47 (1826).

Wats. and Coult., Gray's Man. 6 ed. 605; Britt., Fl. N. J. 273; Chap., Fl. S. St. 538; Coult., Fl. Colo. 380; Upham, Fl. Minn. 157; Bail., Syn. Car. 107.

North America: W. Mass. to N. J. and mts. of Ga.; W. to S. Minn. and Iowa.

Minn. valley: Reported from N. E. districts and westward; infrequent; wet grounds along streams and around lakes.

Carex gracillima SCHWEIN. An. Tab. (1823).
C. digitata SCHWEIN. and TORR. Mon. 324 (1825).

Wats. and Coult., Gray's Man. 6 ed. 604; Mac., Fl. Can. II, 137; Chap., Fl. S. St. 538; Britt., Fl. N. J. 273; Upham, Fl. Minn. 157; Bail., Typ. Car. 71; Bail., Syn. Car. 106.

North America: N. S., Q, Ont. to Man.; S. to N. Eng., N. J. and N. Car.; W. to Minn. and Mo.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; wet meadows and low fields or prairies.

HERB.: *Kassube 264,* Minneapolis; *Sandberg 545,* Chisago Co.

Carex arctata BOOTT, Hook. Fl. II, 227 (1840).

C. sylvatica DEW. Sill. Journ. X, 40 (1826), not Huds.

Wats. and Coult., Gray's Man. 6 ed. 603; Mac., Fl. Can. II, 161; Upham, Fl. Minn. 157; Britt., Fl. N. J. 273; Coult., Fl. Colo. 380.

North America: N. Br., Q., Ont. to N. Eng. and N. J.; W. to Penn., Minn., Colo. and Mont.

Minn. valley: Throughout; woods and dry thickets.

HERB.: *Sheldon 163,* Madison lake; *Taylor 906,* Glenwood; *Bailey 211,* Vermilion lake; *Bailey 556,* Mud lake.

Carex castanea WAHL. K. Acad. Handl. XXIV, 155 (1803).

C. flexilis RUDGE, Linn. Trans. VII, 98 (1804).

C. blepharophora GRAY, Ann. Lyc. N. Y. III, 237 (1836).

Wats. and Cqult, Gray's Man. 6 ed. 603; Bail., Typ. Car. 60; Mac., Fl. Can. II, 162, 386; Upham, Fl. Minn. 158.

North America: Newf., L. Nipigon to Minn.; S. to Conn. and Mich

Minn. valley: N. E. edge; banks of streams; infrequent.

HERB.: *Bailey 557,* Long lake; *Sandberg 619,* Vermilion lake; *Juni 28,* Knife river.

Carex longirostris TORR. Schwein. An. Tab. (1823).

C. sprengelii DEW. Spreng. Syst. III, 827 (1826).

C. longirostris var. *minor* BOOTT, Phil. Acad. 78 (1863).

C. longirostris var. *microcystis* BOECKL. Linn. XLI, 241 (1875).

Wats. and Coult., Gray's Man. 6 ed. 603; Mac., Fl. Can. II, 162; Bail., Typ. Car. 70; Webb., Fl. Neb. 98; Coult., Fl. Colo. 380; Britt., Fl. N. J. 272; Upham, Fl. Minn. 159; Bail., Syn. Car. 102.

North America: N. Br., Q., Ont., Man. to Brit. Col. and Rocky mts.; S. to N. Eng., N. J., Penn.; W. to Neb., Minn. and Dak.

Minn. valley: Forest district; rocky soil and shaded places.

HERB.: *Sheldon 117,* Madison lake; *Ballard 126,* Chaska; *Sheldon 1632,* Taylor's Falls; *Kassube 271,* Minneapolis; *Sandberg 553,* Center City.

Carex limosa LINN. Spec. 977 (1753).

C. elegans WILLD. Prodr. 34 (1787).

C. laxa DEW. Sill. Journ. XXVI, 376 (1834).

C. limosa var. *prairei* DEW. Sill. Journ. XXIX, 71 (1837).

C. irriqua Torr. Club Cat. N. J. (1885).

Wats. and Coult., Gray's Man. 6 ed. 602; Mac., Fl. Can. II, 150; Britt., Fl. N. J. 272; Upham, Fl. Minn. 156; Richt., Pl. Eur. 161; Herd, Fl. Eur. Russ. 142; Trautv., Fl. Sib. 130; Led., Fl. Ross. IV, 307; Hook., Fl. Gt. Brit. 456; Engl. Pax, Nat. Pflanz. II, 2, 125; Bail., Syn. Car. 94: Hart., Scand. Fl. I, 456; Rothr., Fl. Alask. 457.

N. and mid. Europe; N. and W. Asia.

North America: N. S., N. Br., Q., Ont. to Man., Brit. Col., N. W. T. and Sitka, Alaska; S. to N. Eng., N. J. and Penn.; W. to Ill. and Minn.

Minn. valley: Forest district; infrequent; peat bogs and shaded marshes.

HERB.: *Bailey 294,* St. Louis river; *Sandberg 541,* Red Wing.

Carex magellanica LAM. Enc. Meth. III, 385 (1789).

C. limosa var. *irrigua* WAHL. K. Acad. Handl. XXIX, 162 (1803).
C. paupercula MICHX. Fl. N. A. I, 172 (1803).
C. lenticularis DEW. Sill. Journ. VII. 273 (1823).
C. irrigua Sm. Hoppe Car. 72 (1828).

Wats. and Coult., Gray's Man. 6 ed. 602; Mac., Fl. Can. II, 150; Upham, Fl. Minn. 156; Bail., Typ. Car. 70; Coult , Fl. Colo. 387; Richt., Pl. Eur. 161; Herd., Fl. Eur. Russ. 142. Hook., Fl. Gt. Brit. 456; Wats., King Exp . 361; Engl. Pax, Nat. Pflanz. II, 2, 125; Bail., Syn. Car. 94; Hart., Fl. Scand. I, 457.

Northern Europe to Pyrenees and Caucasus; S. America.

North America: Newf., N. S., N. Br., Q., N. E. T., Man., Vancouver; S. to Penn., Minn. and Utah.

Minn. valley: Forest district; rare; peat bogs and low marshes in woodland.

HERB.: *Bailey 90,* Vermilion lake.

Carex crinita LAM. Enc. Meth. 393 (1789).

C. gynandra SCHWEIN. An. Tab. (1823).
C. crinita var. *gynandra* S. and TORR. Car. Mon. 360 (1824).
C. mitchelliana CURT. Sill. Journ. XLIV, 84 (1836).
C. crinita var. *paleacea* DEW. Sill. Journ. X, 270 (1826).
C. crinita var. *minor* BOOTT, Ill. 18 (1862).

Wats. and Coult., Gray's Man. 6 ed. 661; Britt., Fl. N. J. 272; Mac., Fl. Can. II, 149; Upham, Fl. Minn. 156; Chap., Fl. S St. 536. Chap., Suppl. S. St. 660; Cov., Fl. Ark. 231.

North America: Newf., N. Br., Q., Ont. to Ott.; S. to N. Eng., N. J., and Va. to Fla.; W. to Minn. and Ark.

Minn valley: Forest district and probably westward; wet ground along streams and around lakes.

HERB.: *Bailey 107,* Vermilion lake.

Carex prasina WAHL. K. Acad. Handl. XXIV, 161 (1802).

C. miliacea MUHL. Willd. Spec. V (1806).

Wats. and Coult., Gray's Man. 6 ed. 601; Mac., Fl. Can. II, 139; Bail., Typ. Car. 61; Britt., Fl. N. J. 272; Chap., Fl. S. St. 538; Upham, Fl. Minn. 157; Bail., Syn. Car. 87.

North America: Ont. and Vt. to N. J. and mts. of Ga; W. to Mich., Wisc. and Minn.

Minn. valley: Forest district; wet meadows and along streams.

HERB.: *Kassube 268*, Ramsey Co.

Carex aquatilis WAHL. K. Acad. Handl. XXIV, 165 (1802).

Vignea aquatilis REICH. Fl. Exc. 140 (1830.)

Wats. and Coult., Gray's Man. 6 ed. 600; Mac., Fl. Can. II, 143; Upham, Fl. Minn. 155; Coult., Fl. Colo. 388; Britt., Fl. N. J. 271; Herd., Fl. Eur. Russ. 142; Richt., Pl. Eur. 155; Hook., Fl. Gt. Brit. 455; Wats., King Exp. 368; Roth., Wheel. Exp. 277; Bail., Syn. Car. 84; Hart, Fl. Scand. I, 466; Rothr., Alask. 457.

Arctic and Northern Europe.

North America: Greenland, N. S., N. Br., Ont. to Hudson Bay, Man., Brit. Col. and Vancouver; Alaska; S. to N. Eng. and Minn. and N. J.

Minn. valley: Forest district to New Ulm; infrequent or local; margins of ponds and rivers.

HERB.: *Bailey 145*, Vermilion lake; *Sandberg 540*, Minnesota.

Carex stricta LAM. Enc. Meth. III, 387 (1789).

C. acuta PURSH, Fl. Am. I, 38 (1814).
C. angustata BOOTT, Hook., Fl. Bor.-Am. II, 218 (1840).
C. strictior DEW. Wood, Bot. 755 (1861).
C. virginiana var. *elongata* BOECK. Linn. XL, 432 (1875).
C. vulgaris BAIL. Upham, Fl. Minn. 155 (1884).

Wats. and Coult., Gray's Man. 6 ed. 599; Mac., Fl. Can. II, 144; Webb., Fl. Neb. 98?; Bail., Typ. Car. 70, 71, 72; Chap., Fl. S. St. 535; Britt., Fl. N. J. 271; Engl. Pax, Nat. Pflanz. II, 2, 124; Bail., Syn. Car. 84.

North America: Newf., N. S., N. Br., Q. Ont., to Man.; S. to N. Eng., N. J. and Va.; W. to Minn. and Neb.?

Minn. valley: Forest district; Ft. Snelling; to Blue Earth Co.; moist banks of streams and lakes.

HERB.: *Ballard 8a*, Zumbrota; *Ballard 3a*, Goodhue Co.; *Kassube 263*, Minneapolis; *Roberts 261*, Agate Bay.

Carex fusca ALL. Ped. Fl. 2324 (1785).

C. buxbaumii WAHL. K. Acad. Handl. XXIV, 163 (1802).
C. canescens HOOK. Fl. Bor.-Am. II, 216 (1840).

Wats. and Coult, Gray's Man. 6 ed. 599; Upham, Fl. Minn. 156; Britt., Fl. N. J. 271; Bail., Typ Car. 60; Mac., Fl. Can. II, 134; Chap., Fl. S. St. 537; Wats., Fl. Calif. II, 238; Bail., Syn. Car. 77; Coult., Fl. Colo. 387; Richt., Pl. Eur. 168; Hook., Fl. Gt. Brit. 453; Wats., King Exp. 371; Roth., Wheel. Exp. 278; Engl. Pax, Nat. Pflanz. II, 2, 125; Hart., Fl. Scand. I, 463; Rothr., Alask. 457.

Arctic and Alpine Europe; N. Asia; Alpine Australia.

North America: Newf., Hudson Bay and Sitka, Alaska; S. to Arizona and New Mex. in Rocky mts.; S. to N. Eng., N. J., Penn. and mts. of Ga.; W. to Minn., Ill. and Dak.

Minn. valley: S. central district; peat bogs and shaded marshes in forest.

Carex riparia CURT. Fl. Lond. IV, 60 (1821).
C. acuta ALL. Ped. Fl. 2347 (1785).
C. crassa EHRH. Beitr. IV, 43 (1789).
C. lacustris WILLD. Spec. IV (1805).
C. exaltata PETRM. Flora 340 (1844).

Wats. and Coult., Gray's Man. 6 ed. 598; Mac., Fl. Can. II. 164; Upham, Fl. Minn. 158; Britt., Fl. N. J. 271; Chap., Fl. S. St. 545; Richt., Pl. Eur. 167; Herd., Fl. Eur. Russ. 142; Hook., Fl. Gt. Brit. 465; Engl. Pax, Nat. Pflanz. II, 2, 125: Bail., Syn. Car. 76; Hart., Fl. Scand. I, 451.

Northern, Central and Southern Europe; W. Asia; N. Africa and S. America.

North America: Newf., N. Br., Q., Ont. to Man.; S. to N. Eng., N. J., Ga. and Fla.; W. to Minn. and Mo.

Minn. valley: Forest district to Blue Earth Co.; margins of ponds, streams and swamps.

HERB.: *Sandberg 549*, Chisago Co.

Carex trichocarpa MUHL. Willd. Spec. IV, 302 (1805).
C. trichocarpa var. *turbinata* DEW. Sill. Journ. XI, 159 (1827).
C. striata CAREY, Gray's Man. ed. I, 561 (1848).

Wats. and Coult., Gray's Man. 6 ed. 598; Mac., Fl. Can II, 174; Wats., Fl., Calif. II, 251(*in var.*); Upham, Suppl. Minn. 86; Britt., Fl. N. J. 271; Webb., Fl. Neb. 98 (*in var.*).

North America: Ont. and N. Eng. to N. J. and Penn.; W. to Minn. and Mo.

Minn. valley: Probably throughout; marshes and wet meadows.

HERB.: *Sheldon 1302*, Lake Benton; *Sandberg, 617*, Center City.

Carex trichocarpa MUHL. var. **aristata** (R. BR.) BAIL. Bot. Gazette, X, 293 (1885).
C. aristata R. BR. Appx. Frankl. Narr. (1823).
C. atherodes SPRENG. Syst. Veg. III, 828 (1826).
C. orthostachys C. MEY. Fl. Alt. IV, 231 (1844).
C. aristata var. *longo-lanceata* DEW. Sill. Journ. XVIII, 102 (1854).

Wats. and Coult., Gray's Man. 6 ed. 598; Mac., Fl. Can. II, 175; Upham, Fl. Minn. 158; Bail., Typ. Car. 70; Bail. Syn. Car. 75. Coult., Fl. Colo., 381; Wats., King Ex. 374; Roth., Wheel. Exp. 278, 281; Webb., Appx. Neb. 24.

North America: Ont., Man. and Saskatchewan, Athabasca, Peace river region, Columbia valley and Rocky mts.; S. to N. Eng., Wisc., Minn., Neb. and Utah.

Minn. valley: Throughout; typical form westward; variety eastward; wet places or edges of streams and ponds.

HERB.: *Sheldon 1302,* Lake Benton (*typical*); *Sheldon 402,* Madison Lake, Blue Earth Co.; *Ballard 46,* Chaska; *Ballard 44,* Chaska [var *aristata* (R. Br.)]; *Ballard 6a,* Goodhue Co.; *Sandberg 550,* Chisago Co.

Carex filiformis LINN. Spec. 976 (1753).

C. tomentosa LIGHTF. Fl. Scot. II, 552 (1777).
C. splendida WILLD. Prodr. 103 (1787).
C. lasiocarpa GAUD. Agr. II, 125 (1811).

Wats. and Coult., Gray's Man. 6 ed. 597; Britt., Fl. N. J. 271; Mac., Fl. Can. II, 165; Webb., Fl. Neb. 98; Wats., Fl. Calif. II, 250 *in var.*; Coult., Fl. Colo. 381; Upham, Fl. Minn. 158; Richt., Pl. Eur. 167; Herd., Fl. Eur. Russ. 142; Hook., Fl. Gt. Brit. 460; Wats., King Exp. 374; Bail., Syn. Car. 74; Engl. Pax, Nat Pflanz. II, 2, 125; Hart., Fl. Scand. I, 454.

Middle Europe and Siberia.

North America: Newf., N. S., N. Br., Ont., Man., Brit. Col. and Vancouver; S. to N. Eng., N. J., Penn.; W. to Ind,, Minn., Neb., Dak. and Mont.

Minn. valley: Forest district and extending westward to Granite Falls; peat bogs and swamps.

HERB.: *Bailey 200,* Vermilion lake; *Sandberg 548,* Chisago Co.

Carex filiformis LINN. var. **lanuginosa** (MICHX.) B. S. P. Cat. N. Y. (1888).

C. lanuginosa MICHX. Fl. N. Am. I, 175 (1803).
C. pellita MUHL. Willd. Spec. IV (1805).
C. filiformis var. *latifolia* BOECKL. Linn. XLI, 309 (1875).

Wats. and Coult., Gray's Man. 6 ed. 597; Mac., Fl. Can. II, 165; Bail., Syn. Car. 74; Bail., Typ. Car 64; Coult., Fl. Colo. 381; Wats., Fl. Calif. II, 250; Britt., Fl. N. J. 271; Upham, Fl. Minn. 158; Roth., Wheel. Exp. 278; Wats., King Exp. 373; Webb., Appx. Neb. 23.

North America: N. S., N. Br., Q., Ont. to Saskatchewan, Athabasca and Mackenzie river region; Brit. Col. and Vancouver; S. to N. J. and Va.; W. to Minn. Mo., Colo., Tex. Mex. and Calif.

Minn. valley: Forest district; N. W. districts; swamps and marshes.

HERB.: *Sheldon 250,* Lake Washington, Le Sueur Co.; *Ballard 34,* Carver; *Ballard 19a,* Goodhue Co.; *Kassube 269,* Ramsey Co.

Carex houghtonii TORR. Cyp. 413 (1836).

Wats. and Coult., Gray's Man. 6 ed. 597; Mac., Fl. Can. II, 164; Upham, Fl. Minn. 158; Bail., Syn. Car. 74.

North America: N. S., Q., Hudson Bay to Saskatchewan and N. W. T., lat. 54° N.; S. to Maine and N. Y.; W. to Wisc., Minn. and Iowa.

Minn. valley: Forest district to Blue Earth Co,; wet banks and shores.

HERB.: *Bailey 206*, Vermilion lake; *Bailey 509*, Agate Bay.

Carex squarrosa LINN. Spec. 973 (1753).

C. typhina MICHX. Fl. N. Am. I, 169 (1803).
C. typhinoides SCHWEIN. An. Tab. (1823).

Wats. and Coult., Gray's Man. 6 ed. 596; Mac., Fl. Can. II, 137; Britt., Fl. N. J. 270; Upham, Fl. Minn. 158; Chap., Fl. S. St. 537; Cov., Fl. Ark. 231; Bail., Syn. Car. 71; Webb., Appx. Neb. 23.

North America: Ont. to N. Eng., N. J. and Ga.; W. to Minn., Mo. and Neb.

Minn. valley: Reported from the S. E. edge; rare; low, wet meadows or swamps.

Carex pseudocyperus LINN. Spec. 978 (1753).

C. reversa GILIB. Exerc. Phyt. II, 549 (1792).

Wats. and Coult., Gray's Man. 6 ed. 596; Mac., Fl. Can. II, 174; Upham, Fl. Minn. 158; Britt., Fl. N. J. 270; Richt., Pl. Eur. 166; Herd., Fl. Eur. Russ. 142; Hook., Fl. Gt. Brit. 465; Engl. Pax, Nat. Pflanz. II, 2, 125; Bail., Syn. Car. 76; Hart., Fl. Scand. I, 455.

Northern, Central and Southern Europe; Asia; temperate and S. Africa; Australia.

North America: N. S., N. Br., Q., Ont. to Man. and Saskatchewan; S. to N. Eng., N. J., Penn., Mich., Wisc. and Minn.

Minn. valley: Reported from forest district and S. W. district; rare; margins of lakes and bogs.

Carex pseudocyperus LINN. var. **americana** HOCHST. Herb. Un. It. (1837).

C. furcata ELL. Sk. II, 552 (1824) *not Lap.*
C. pseudocyperus SCHWEIN. and TORR. Car. Mon. 355 (1825).
C. comosa BOOTT, Linn. Trans. XX, 117 (1845).
C. *pseudocyperus* var. *comosa* BOOTT, Bot. Calif. II, 252 (1880).

Wats. and Coult., Gray's Man. 6 ed. 596; Mac., Fl. Can. II, 174; Britt., Fl. N. J. 270; Bail., Typ. Car. 54; Chap., Fl. S. St. 543; Upham, Fl. Minn. 158; Mac., Fl. Can. II, 389; Bail., Syn. Car. 70.

North America: Newf., N. Br., Ont.; S. to N. Eng., N. J., Ga.; W. to Minn., Mo. and La.; also, Oregon and Calif.

Minn. valley: Forest district; abundant; edges of ponds and in bogs.

HERB.: *Ballard 781*, Swan lake, Carver Co.; *Ballard 172*, Shakopee; *Sheldon 992*, Cross lake, Brown Co.; *Sheldon 341*, Smith's Mill, Blue Earth Co.; *Sheldon 248*, Lake Washington, Le Sueur Co.; *Taylor 407*, Lake Elysian; *Ballard 1a*, Zumbrota.

Carex hystricina MUHL. Willd. Spec. IV (1805).

C. cooleyi DEW. Sill. Journ. XLVIII, 144 (1845).
C. georgiana DEW. l. c. VI, 245 (1848).
C. thurberi DEW. Mex. Bound. 232 (1859).

Wats. and Coult., Gray's Man. 6 ed. 596; Mac., Fl. Can. II, 173; Chap., Fl. S. St. 543; Webb., Fl. Neb. 98; Britt., Fl. N. J. 270; Coult., Fl. Colo. 382; Bail., Syn. Car. 69.

North America: Newf., N. S., N. Br. to Man., Saskatchewan and N. of lat. 52° in prairie region; S. to N. Eng., N. J., Ga.; W. to Minn., Dak., Neb., Ind. Terr. and N. Mex.

Minn. valley: Forest district and westward to Chippewa valley at least; wet meadows and margins of lakes.

HERB.: *Sheldon 342*, Smith's Mill, Blue Earth Co.; *Ballard 7*, Chaska; *Ballard 338*, Jordan, Scott Co.; *Taylor 75*, Elysian; *MacM.* and *Sheld. 62*, Brainerd; *Ballard 4a*, Zumbrota; *Herrick 336*, Minneapolis; *Kassube 270*, Minneapolis; *Sandberg 551*, Center City; *Wickersheim 135*, Ash lake, Lincoln Co.

Carex schweinitzii DEWEY, Sill. Journ. IX, 68 (1825).

Wats. and Coult. Gray's Man. 6 ed. 595; Mac., Fl. Can. II, 173; Britt., Fl. N. J. 270.

North America: W. N. Eng. and Ont. to Minn. and Mich.

Minn. valley: Forest district; swamps and borders of lakes.

HERB.: *Ballard 33*, Chaska.

Carex lurida WAHL. K. Acad. Handl. XXIV, 153 (1803).

C. tentaculata MUHL. Willd. Spec. IV, 266 (1805).
C. rostrata WILLD. Spec. IV, 282 (1805).
C. gigantea KUNTH, Enum. II, 503 (1837).
C. purshii OLN. Exsicc. I, 30 (1871).
C. beyrichiana BOECKL. Linn. XLI, 239 (1876).

Wats. and Coult., Gray's Man. 6 ed. 595; Bail., Typ. Car. 10; Mac., Fl. Can. II, 173; Coult., Fl. Colo. 382; Britt., Fl. N. J. 270; Upham, Fl. Minn. 158; Mac., Fl. Can. II, 389; Cov., Fl. Ark. 231.

North America: N. S., N. Br., Q., Ont. to N. Eng., N. J., Va. and Fla.; W. to Minn., Ill., Mo. and Ark.

Minn. valley: Reported from forest district; infrequent; wet meadows and bogs.

Carex retrorsa SCHWEIN. An. Tab. (1823).

C. reversa SPRENG. Syst. Veg. III, 827 (1826).

Wats. and Coult., Gray's Man. 6 ed. 595; Bail., Typ. Car. 71: Bail., Syn. Car. 68; Upham, Fl. Minn. 158.

North America: N. S., N. Br., Q., Ont. to Man., Saskatchewan, Brit. Col. and Rocky mts.; S. to N. Eng., Penn., Mich. and Minn.

Minn. valley: Throughout; margins of lakes and streams; not infrequent.

HERB.: *Taylor 905,* Glenwood; *Bailey 67,* Vermilion lake; *Bailey 101,* Vermilion lake; *Juni 22,* Moose lake; *Ballard 13a,* Goodhue Co.; *Herrick 337,* Minneapolis; *Taylor 1128,* Glenwood.

Carex tuckermani DEW. Sill. Journ. XLIV, 48 (1845).

C. bullata AUCT. AMER., not SCHKUHR.

C. cylindrica GRAY, Man. ed. I, 566 (1848).

Wats. and Coult., Gray's Man. 6 ed. 594; Mac., Fl. Can. II, 172, Upham, Suppl. Minn. 86; Britt., Fl. N. J. 269.

North America: Newf., N. Br., Q., Ont. and W. N. Eng. to N. J. and Minn.

Minn. valley: Forest district; swamps and borders of lakes.

HERB.: *Sheldon 149,* Madison Lake; *MacM.* and *Sheld. 64,* Brainerd; *Sandberg 612, 613,* Center City; *Bailey 104,* Vermilion lake.

Carex monile TUCKERM. Enum. Meth. 20 (1843).

C. vaseyi DEW. Sill. Journ. XXIX, 347 (1860).

Wats. and Coult., Gray's Man. 6 ed. 594; Britt., Fl. N. J. 269; Bail., Typ. Car. 39; Wats., Fl. Calif. II, 251; Coult., Fl. Colo. 353; Upham, Fl. Minn. 158; Bail., Syn. Car. 67.

North America: N. S., N. Br., Q., Ont., N. E. T.; also Brit. Col. and Calif.; S. to N. Eng., N. J. and Fla.; W. to Minn. and Mo.

Minn. valley: Forest district; wet places and edges of ponds or streams.

HERB.: *Taylor 25,* Elysian; *Ballard 9a,* Goodhue, Co.; *10a,* Goodhue Co.; *Juni 23,* Agate bay; *Bailey 423,* Fall lake; *Bailey 274,* St. Louis river.

Carex utriculata BOOTT, Hook. Fl. Bor.-Am. II, 221 (1840).

C. ampullacea var. *utriculata* CAREY, Gray's Man. ed. 1, 566 (1848).

C. rostrata var. *utriculata* BAIL. Proc. Am. Acad. XXII, 67 (1886).

Wats. and Coult., Gray's Man. 6 ed. 594; Mac., Fl. Can. II, 171; Britt., Fl. N. J. 269; Wats., Fl. Calif. II, 252; Upham, Fl. Minn. 158; Coult., Fl. Colo. 383; Mac., Fl. Can. II, 388; Wats., King Exp. 374; Roth., Wheel. Exp. 278; Bail., Syn. Car. 67.

North America: Atl. to Pac. in Can.; S. to N. Eng., N. J. and Fla.; W. to Minn. and Mo.; S. in Rocky mts. to Colo. and Utah.

Minn. valley: Forest district and N. W.; swamps and marshes.

HERB.: *Ballard 43,* Chaska; *Taylor 520,* Mud lake, Waseca Co.; *Bailey 144*, Vermilion lake; *Bailey 112*, Vermilion lake.

Carex oligosperma MICHX. Fl. Am. II, 174 (1803).

C. oakesiana DEW. Sill. Journ. XIV, 351 (1828).

Wats. and Coult., Gray's Man. 6 ed. 593; Mac., Fl. Can. II, 168; Upham, Fl. Minn. 159.

North America: N. Eng., N. Br. to Bear lake and lat. 66° N.; S. to Penn. and Minn.

Minn. valley: N. E. district; swamps and borders of lakes.

HERB.: *Sandberg 615, 616,* Center City; *Arthur 10a,* White Bear lake.

Carex lupulina MUHL. Willd. Spec. IV (1805).

C. lurida BAIL. Proc. Am. Acad. XXII, 63 (1886).

Wats. and Coult., Gray's Man. 6 ed. 593; Bail., Typ. Car. 11; Mac., Fl. Can. 167; Britt., Fl. N. J. 269; Coult., Fl. Colo. 382; Chap., Fl. S. St. 543, Upham, Fl. Minn. 158; Mac., Fl. Can. II, 386; Engl. Pax, Nat. Pflanz. II, 2, 125; Bail., Syn. Car. 63.

North America: N. S., Q., Ont. to Hudson Bay; S. to N. Eng., N. J. and Fla.; W. to Minn., Ind. Terr. and N. Mex.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; wet meadows, bogs and swamps.

HERB.: *Sheldon 334,* Smith's Mill, Blue Earth Co.; *Ballard 697,* Waconia; *Sandberg 552,* Red Wing.

Carex lupulina MUHL. var. **longipedunculata** SARTW. Herb. (1856).

C. folliculata LAM. Enc. Meth. III, 391 (1789).

C. gigantea RUDGE, Linn. Trans. VII, 99 (1804).

C. lupulina MUHL. var. *pedunculata* DEW. Wood, Cl.-Bk. Bot. 376 (1855).

C. canadensis DEW. Sill. Journ. XLI, 229 (1866).

C. lupulina UPH. Fl. Minn. 158 (1884) in part.

C. lurida var. *polystachya* BAIL. Proc. Am. Acad. XXII, 63 (1886) in part.

C. lurida MACOUN, Fl. Can. II, 167 (1888) in part.

Wats. and Coult., Gray's Man. 6 ed. 593; Bail., Typ. Car. 12; Chap., Fl. S. St. 543(?); Britt., Fl. N. J. 269(?); Mac., Fl. Can. II, 386; Bail., Syn. Car. 64.

North America: Ont. to Hudson Bay?; S. to N. Eng., N. J., Fla.; W. to Minn., Iowa and Mo.

Minn. valley: Forest district, especially N. E.; infrequent; wet meadows and bogs.

Carex intumescens RUDGE, Linn. Trans. VII, 97 (1804).

C. folliculata WAHL. K. Acad. Handl. XXIV, 152 (1802) not Linn.

Wats. and Coult., Gray's Man. 6 ed. 592; Mac., Fl. Can. II, 167; Upham, Fl. Minn. 158; Britt., Fl. N. J 269; Bail., Typ. Car. 62, 64, 72; Chap., Fl.

S. St. 554; Coult., Fl. Colo. 382; Engl. Pax, Nat. Pflanz. II, 2, 125; Bail., Syn. Car. 62.

North America: Newf., N. S., N. Br., Q., Ont. to Man.; S. to N. Eng., N. J. and Fla.; W. to Minn. and Mo.

Minn. valley: Forest district; S. W. district; probably throughout; wet meadows and bogs or swamps.

HERB.: *Taylor 50*, Elysian; *Bailey 68*, Vermilion lake; *MacM.* and *Sheld. 61*, Brainerd.

Carex pauciflora LIGHTF. Fl. Scot. II, 543 (1777).

C. patula HUDS. Fl. Angl. 402 (1762) not Host.
C. leucoglochin LINN. f. Suppl. 413 (1781).
Leucoglochin pauciflorus HEUFF. Flora 528 (1844).
Psyllophora pauciflora SCHUR. Enum. 697 (1866).

Wats. and Coult., Gray's Man. 6 ed. 592; Mac., Fl. Can. II, 111; Richt., Pl. Eur. 145; Hook., Fl. Gt. Brit. 448; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 138; Upham, Suppl. Minn. 86; Rothr., Alask. 457.

Arctic and Alpine Europe.

North America: Newf. to Ont., Man., N. W. T. and Vancouver; N. to Sitka; S. to N. Eng., N. Penn., Mich. and Minn.

Minn. valley: N. districts; peat bogs and cold marshes.

HERB.: *Sandberg 614*, Center City; *Bailey 203*, Vermilion lake.

X. AROIDEAE. Arum Family.

Orontiaceae LINDL. Veg. King. 193 (1846).

Araceae ENGLER, DC. Mon. Phan. II (1875).

Endlicher, *Gen. Pl.* 232 (1840); Benth. and Hook., *Gen. Pl.* III, 955 (1883); Engler *in Engler and Prantl, Nat. Pflanz.* 2, III, 102 (1887).

Genera: 105 living; 2–3 extinct? Tropical and temperate regions.

Species: 1000; 92 per cent. in tropics; 8 per cent. in temperate regions.

ACORUS LINN. Gen. 296 (1737).

Benth. and Hook., *Gen. Pl.* III, 999; Durand, *Ind. Gen. Phan.* Engler and Prantl., *Nat. Pflanz.* 2, III, 118 (Engler); Schenck, *Palaeophyt.* 378.

Living species: 2; Japan, 1; temperate northern regions; 1.

Fossil species: 2–3, doubtful; Spitzbergen, 1: tertiary, (*Heer*).

Acorus calamus LINN. Spec. 324 (1753).

A. odoratus LAM. Fl. Fr. III, 299 (1778).
Calamus aromaticus GULDENST. It. II, 327 (1791).
Acorus aromaticus GILIB. Exerc. Phyt. II, 205 (1792
A. commutatus SCHOTT. Prodr. Aroid. 578 (1860).

Wats. and Coult., Gray's Man. 6 ed. 551; Britt., Fl. N. J. 254; Upham, Fl. Minn. 135; Mac., Fl. Can. II, 74; Chap., Fl. S. St. 442; Webb., Fl. Neb., 98; Hook.. Fl. Gt. Brit. 424; Trautv., Fl. Sib. 112; Led., Fl. Ross. IV, 13; Richt., Pl Eur. 171; Herd., Fl. Eur. Russ. 122; Engl, Nat. Pflanz. II, 3, 118; Cov., Fl. Ark. 227; Hart., Scand. Fl. I. 429.

Almost all Europe; temperate Asia to China and Japan.

North America: N. S., N. Br., Q., Ont., Owen Sound; L. of Woods and Saskatchewan; S. to N. J. and Fla.; W. to Minn., Dak., Iowa, Neb., Kan. and Ark.

Minn. valley: E. districts to Chippewa valley; margin of swamps and streams.

HERB.: *Ballard 23n*, Chaska; *Taylor 10*, Elysian; *Leiberg 62*, Blue Earth Co.; *Bailey 50*, Vermilion lake; *Sandberg 524*, Red Wing; *Sandberg 525*, Chisago Co.; *Sandberg 526*, Chisago Co.; last two are narrow-leaved *forma angustifolia.*

SPATHYEMA RAF. Med. Rep. X, 173 (1808).

Ictodes BIGEL. Med. Bot. I, 43 (1817).
Symplocarpus SALISB. Nutt. Gen. I, 105 (1818).

Benth. and Hook., *Gen. Pl.* III, 995; Durand, *Ind. Gen. Phan.* 446; O. Kuntze, *Rev. Gen.* II, 743; Engler and Prantl, *Nat. Pflanz.* 2, III, 122 (Engler).

Living species: 1; Atl. N. America, Japan and Amurland.

Spathyema foetida (LINN.) RAF. Med. Rep. II, 10, 173 (1808).

Dracontium foetidum LINN. Spec. 967 (1762).
Pothos foetidus MICHX. Fl. N. Am. II, 186 (1803).
Ictodes foetidus BIGEL. Med. Bot. II, 41 (1817).
Symplocarpus foetidus SALISB. Nutt. Gen. 1, 105 (1818).

Wats. and Coult., Gray's Man. 6 ed. 551; Britt., Fl. N. J. 254; Mac., Fl. Can. II, 73; Upham, Fl. Minn. 134; Chap, Fl. S. St. 441; Engl., Nat. Pflanz. II, 3, 122.

Japan and Amurland.

North America: N. S.; N. B., Q., Ont. to swamps of N. Car.; W. to Minn. and Iowa.

Minn. valley: Forest district to New Ulm; local; bogs and near springs.

HERB.: *Holzinger 262*, Winona Co.; *Herb. Sheld. 1863*, Minneapolis.

CALLA LINN. Gen. 697 (1737).

Provenzalia ADANS. Fam. II, 469 (1763).

Benth. and Hook., *Gen. Pl.* III, 989; Durand, *Ind. Gen. Phan.* 446; Engler and Prantl, *Nat. Pflanz.* 2. III, 123 (Engler).

Living species: 1; Europe to Alps and Carpathians; Siberia; Atl. N. Amer.

Calla palustris LINN. Spec. ed. 2, 1373 (1762).

C. aethiopica GAERTN Fruct. II, 20 (1791).

Wats. and Coult., Gray's Man. 6 ed. 550; Britt., Fl. N. J. 253; Mac., Fl. Can. II, 73; Upham, Fl. Minn. 134; Nym., Fl. Eur.; Led., Fl Ross. IV, 11; Richt., Pl. Eur. 171; Herd., Fl. Eur. Russ. 122; Engl., Nat. Pflanz. II, 3, 123; Hart., Fl Scand. I, 428.

Europe, N. of Alps and Carpathians; Siberia.

North America: N. S., N. Br., Q , Ont., Man. to Saskatchewan and Hudson Bay, N. W. T.; S. to N. Eng., N. J., Mich. and Minn.

Minn. valley; N. E. district only; cold marshes and bogs; perhaps N. W.

HERB.: *Bailey 98,* Vermilion lake; *Roberts 123,* Duluth; *Sheldon 2000a,* Keegan's lake; *MacM. 107a,* Taylor's Falls.

ARISAEMA MART. Flora, II, 459 (1831).

Benth. and Hook., *Gen. Pl.* III, 965; Durand, *Ind. Gen. Phan.* 430; Engler and Prantl, *Nat. Pflanz.* 2, III, 150 (Engler).

Living species: 50±; mostly temperate and subtropical Asia; 1–2, Abyssinia; N. America, 3–4; Canada, 2; E. sts., 2; S. sts., 3; only in Atl. Region

Fossil species: *Araceae* (see *Schenck, Palaeophyt,* 377).

Arisaema triphyllum (LINN.) TORR. Fl. N. Y. II (1843).

Arum triphyllum LINN. Spec. 1365 (1758) *pro parte.*

Arisaema atrorubens BLUME, Rumphia I, 97 (1835).

Wats. and Coult., Gray's Man. 6 ed. 549; Britt., Fl. N. J. 252; Chap., Fl. S. St. 440; Upham, Fl. Minn. 134; Mac., Fl. Can. II, 72; Webb., Fl. Neb. 97; Cov., Fl. Ark. 227.

North America: N. S., N. Br., Q., Ont., N. Superior region to Man.; S. to N. Eng., N. J., Fla.; W. to Minn., Neb., E. Kansas and Ark.

Minn. valley: Throughout; abundant; rich woodland and shaded river-banks.

HERB.: *Taylor 432a,* Janesville; *Ballard 58,* Chaska; *Arthur 156,* Vermilion lake; *Herrick 278,* Minneapolis; *Kassube 221,* Minneapolis; *Sandberg 523,* Vasa; *Herb Wickersheim 116,* Lake Benton; *Herb. Moyer 227, 228,* Montevideo.

XI. LEMNACEAE. Duck-Weed Family.

Pistiaceae LINDL. Veg. Kingd. (1846) *in part.*

Endlicher, *Gen Pl.* 232 (1840); Benth. and Hook., *Gen. Pl.* III, 1000 (1883); Engler *in Engler and Prantl, Nat. Pflanz.* 2, III, 154 (1887).

Genera: 2; temperate and tropical regions.

Species: 24±; over one-half in tropics.

LEMNA LINN. Gen. 798 (1737).

Telmatophace SCHLEID. Linn. XIII, 391 (1839).
Spirodela SCHLEID. l. c. (1839).

Benth. and Hook., *Gen. Pl.* III. 1001; Durand, *Ind. Gen. Phan.* 451; Engler and Prantl, *Nat. Pflanz.* 2, III. 163, 164 (Engler); Schenck, *Palaeophyt.* 378.

Living species: 7; temperate and tropical regions. Russia, 3; Europe, 4; N. America, 6; Canada, 3; Rocky mts., 3; S. Sts., 3; California, 5–6; Pl. King, 4; E. Sts., 6.

Fossil species: 2; Oligocene, Spitzbergen (*Heer*); Samland (*Conwentz*).

Lemna minor LINN. Spec. 970 (1753).

Lenticula minor SCOP. Fl. Carn. 1142 (1772).
Lemna vulgaris var. *B.* LAM. Enc. Meth. III, 464 (1789).
Lemna minima HUMB. Gen. I, 372 (1815).
L. cyclostasa ELL. ex. Schleid. Linn. XIII, 390 (1839).

Wats. and Coult., Gray's Man. 6 ed. 553; Britt., Fl. N. J. 254; Webb., Fl. Neb. 97; Wats., Fl. Calif. II, 190; Upham, Fl. Minn. 135; Mac., Fl. Can. II, 75; Coult., Fl. Colo. 360; Chap., Fl. S. St. 442; Nym., Fl. Eur.; Led., Fl. Ross. IV, 17; Gris., Fl. W. I.; Hook., Fl. Gt. Brit. 425; Richt., Pl. Eur. 175; Herd., Fl. Eur. Russ. 122; Engl., Nat. Pflanz. II. 3, 164; Wats., King Exp. 336; Cov., Fl. Ark. 228; Hart., Fl. Scand. I, 430.

Europe; Asia; Africa; Australia; S. America.

North America: Throughout; continent below 58° N. lat.

Minn. valley: Forest district and probably westward; ponds and pools; floating on the surface.

HERB.: *Ballard 610*, Chaska; *Ballard 9*, Chaska.

Lemna perpusilla TORR. N. Y. Fl. II, 245 (1843).

Wats. and Coult., Gray's Man. 6 ed. 552; Britt., Fl. N. J. 254.

North America: N. Y. and N. J. to Mich., Wis. and Minn.

Minn valley: Forest district; floating in ponds and pools.

HERB.: *Sheldon 118*, Elysian.

Lemna trisulca LINN. Spec. 970 (1753).

Lenticula trisulca SCOP. Fl. Carn. 1143 (1772).
Lemna cruciata ROXB. Fl. Ind. III, 566 (1832).
L. intermedia RUTHE, ex. Schleid. Linn. XIII, 391 (1839).
Staurogeton trisulcus SCHUR. En. 636 (1866).

Wats. and Coult., Gray's Man. 6 ed. 552; Britt., Fl. N. J. 254; Upham, Fl. Minn. 135; Coult., Fl. Colo. 360; Mac., Fl. Can. II, 74; Webb., Fl. Neb. 97; Wats., Fl. Calif. II, 189; Hook., Fl. Gt. Brit. 425; Gris., Fl. W. I.; Nym., Fl. Eur.; Led., Fl. Ross. IV, 17; Richt., Pl. Eur. 175; Herd., Fl. Eur. Russ. 122; Engl., Nat. Pflanz. II, 3, 164; Wats., King Exp. 336; Cov., Fl. Ark. 228; Hart., Fl. Scand. I, 430.

Europe; Asia; Australia; South America; Africa.

North America: Atl. to Pac, in Can.; to lat 58° N.; S. to N. J. and W. to Minn., Neb. and N. Mex., Oregon and Calif.

Minn. valley: Throughout; not infrequent; ponds and pools, floating on the surface.

HERB.: *Ballard 61*, Chaska; *Sheldon 355*, Madison Lake, Blue Earth Co.; *Ballard 442*, Prior's lake, Scott Co.; *Taylor 218a*, Lake Helena, Waseca Co.; *Ballard 818*, Page lake, Carver Co.; *Ballard 680*, Waconia.

Lemna polyrhiza LINN. Spec. 970 (1753).

Lenticula polyrhiza LAM. Fl. Fr. 189 (1778).
Lemna orbicularis KIT. in Schult. Ostr. Fl. ed. 2, 64 (1814).
L. thermalis BEAUV. in Nutt Gen. I, 19 (1818).
L. major C. A. M. Ind. Cauc. 11 (1831).
L. orbiculata ROXB. Fl. Ind. III, 565 (1832).
Speirodela polyrhiza SCHLEID. Linn. XIII, 392 (1839).
Lemna bannatica KUNTH, Enum. III, 7 (1841).
Telmatophace polyrhiza GODR. Fl. Lorr. III, 18 (1844).
T. orbicularis SCHUR. Enum. 635 (1866).

Wats. and Coult., Gray's Man. 6 ed. 552; Britt., Fl. N. J. 255; Upham, Fl. Minn. 135; Mac., Fl. Can. II, 75; Webb., Fl. Neb. 97; Wats., Fl. Calif. II. 190; Coult., Fl. Colo. 360; Chap., Fl. S. St. 443; Hook., Fl. Gt. Brit. 425; Nym., Fl. Eur.; Led., Fl. Ross IV, 18; Richt., Pl. Eur. 175; Herd., Fl. Eur. Russ. 122; Engl., Nat. Pflanz. II. 3, 164; Mac., Fl. Can. II, 368; Wats., King Exp. 336; Cov., Fl. Ark. 228; Hart., Fl. Scand. I, 429.

Europe—except Greece; Russia and Siberia; Australia; Madeiras; Central America and West Indies.

North America: Same distribution as last.

Minn. valley: Throughout; abundant; ponds and pools; floating on the surface.

HERB.: *Ballard 441*, Prior's lake, Scott Co.; *Ballard 882*, Waconia; *Ballard 60*, Chaska; *Sheldon 724*, Sleepy Eye.

GRANTIA GRIFF. Notul. III, 236 (1851) *not Boiss.*

Wolffia HORKEL, ex. Schleid. Linn. XIII, 389 (1839), not **Wulffia** NECK. Elem. I, 35 (1790).

Horkelia REICH. ex. Bartl. Ord. Nat. 76 (1830), not Cham. and Schlecht. (1827).

Bruniera FRANCHET, Billotia, 25 (1864).

Benth. and Hook., *Gen. Pl.* III, 1001; Durand, *Ind. Gen. Phan.* 451; Engler and Prantl, *Nat. Pflanz.* 2, III, 164 (Engler).

Living species: 12; Europe; E. Indies; tropical Africa and America to Canada and Chile. N. America, 2 sp.

Grantia brasiliensis (WEDD).

Wolffia brasiliensis WEDD. Ann. Sci. Nat. ser. 3, XII, 157 (1849).

Wats. and Coult., Gray's Man. 6 ed. 553; Mac., Fl. Can. II. 76.

North America: With G. *columbiana.*

Minn. valley: Forest district; probably throughout; pools and ponds; floating on the surface.

HERB.: *Ballard 888*, Lake Waconia; *Ballard 62* (*partly*), Chaska, Carver Co.

Grantia columbiana (KARST).

Wolffia columbiana KARST.

Wats. and Coult., Gray's Man. 6 ed. 553; Britt., Fl. N. J. 255; Upham, Fl. Minn. 135; Mac., Fl. Can. II, 76, 368.

North America: Ont., Conn. and N. J.; to Minn., Mo. and La.

Minn. valley: Forest district; Waconia to Blue Earth Co.; ponds and pools; floating near the surface.

HERB.: *Ballard 62*, Chaska; *Oestlund 182*, Minnehaha.

XII. XYRIDACEAE. Star-Eyed Grass Family.

Endlicher, *Gen. Pl.* 123 (1840); Benth. and Hook., *Gen. Pl.* III, 841 (1883); Engler *in Engler and Prantl, Nat. Pflanz.* 2, IV, 18 (1887).

Genera: 2; tropics and N. temperate America; largely tropical.

Species: 48±; principally in tropical America.

XYRIS LINN. Gen. 31 (1737).

Schizmaxon STEUD. Bot. Zeit. 391 (1856).

Benth. and Hook., *Gen. Pl.* III, 842; Durand, *Ind. Gen. Phan.* 433; Engler and Prantl, *Nat. Pflanz.* 2, IV, 20 (Engler); Schenck, *Palaeophyt.* 366.

Living species: 40; warmer regions, except Europe; principally N. and S. America. N. America, 20±; S. Sts., 18; E. Sts., 4; Canada, 1.

Fossil species: ? Tertiary, W. N. America (*Lesquereaux*).

Xyris flexuosa MUHL. Cat. 5 (1813).

? *X. jupicai* MICHX. Fl. N. Am. I, 23 (1803) *nom. dub.*

X. bulbosa KUNTH, Enum. IV, 11 (1843).

X. scabra ENGELM. Herb. Columbia Coll.

Wats. and Coult., Gray's Man. 6 ed. 537; Britt., Fl. N. J. 247; Upham, Fl. Minn. 149; Mac., Fl. Can. II, 54; Chap., Fl. S. St. 500; Ries, Torr. Bull. XIX, 37.

North America: N. S.. Ont. (in var.?), Mass. to N. J. and Md. to Fla.; W. to Minn., Mo., Ark. and Tex.

Minn. valley: Reported from the N. E. district; rare or doubtful; sandy or peaty bogs.

XIII. ERIOCAULACEAE. Pipewort Family.

Endlicher, *Gen. Pl.* 122 (1840); Benth. and Hook., *Gen. Pl.* III, 1019 (1883); Hieronymus *in Engler and Prantl, Nat. Pflanz.* 2, IV, 21 (1887).

Genera: 6; warmer regions and in temperate zones.

Species: 340±; 60 per cent. in Brazil.

ERIOCAULON LINN. Gen. ed. II, 81 (1742).

Randalia, Sphaerochloa, Symphachne BEAUV. Ann. Sci. Nat. 1, xiii, 47 (1828).

Nasmythia HUDS. Fl. Angl. ed. 2, 414 (1778).

Leucocephala ROXB. Fl. Ind. III, 612 (1832).

Electrosperma F. MULL. Trans. Phil. Soc. Vict. I, 23 (1855).

Lasiolepis BOECKL. Flora 90 (1873).

Chaetodiscus STEUD. Syn. Glum. II, 261 (1855).

Benth. and Hook., *Gen. Pl.* III, 1020; Durand, *Ind. Gen. Phan.* 454; Engler and Prantl, *Nat. Pflanz.* 2, IV, 26 (Hieronymus).

Living species: 110; Asia, Africa, Australia, S. America, E. N. America, Ireland and Hebrides. N. America, 4–5; S. Sts., 4; Canada, 1; E. Sts., 3.

Fossil species: ? Tertiary, W. N America (*Lesquereaux*).

Eriocaulon septangulare WITH. Bot. Arr. 184 (1776).

Nasmythia articulata HUDS. Fl. Angl. 415 (1778).

Eriocaulon decangulare HULL, Brit. Fl. 29 (1799).

E. pellucidum MICHX. Fl. N. Am. II, 166 (1803).

E. articulatum MORONG, Torr. Bull. XVIII, 353 (1891).

Wats. and Coult., Gray's Man. 6 ed. 567; Britt., Fl. N. J. 260; Upham, Fl. Minn. 149; Mac., Fl. Can. II, 92; Richt., Pl. Eur. 176; Hook., Fl. Gt. Brit. 421; Engl. Hieron., Nat. Pflanz. II, 4, 27.

Ireland, Skye and the Hebrides.

North America: Newf., N. S., N. Br., Lake Superior and Saskatchewan; S. to N. J.; W. to Ind., Mich. and Minn.

Minn. valley: Reported from N. edge; rare; borders of ponds and lakes.

HERB.: *Bailey 536*, Burntside lake.

XIV. COMMELINACEAE. Spiderwort Family.

Endlicher, *Gen. Pl.* 124 (1840); Benth. and Hook., *Gen. Pl.* III, 844 (1883); Schönland *in Engler and Prantl, Nat. Pflanz.* 2, IV, 60 (1887).

Genera: 25; tropics, and a few in temperate regions, except of Asia and Europe.

Species: 325; 90 per cent. +, in tropics.

TRADESCANTIA LINN. Gen. 277 (1737).

Ephemerum MOENCH, Meth. 237 (1794).

Knowlesia HASSK. Commel. Ind. 5 (1870).

Descantaria SCHLECHT. Linn. XXVI, 140 (1852).

Heterachthia KUNZE, Bot. Zeit. 1 (1850).

Pyrrheima HASSK. Flora 366 (1869).

Mandonia HASSK. Flora 260 (1871).

Disgrega HASSK. Commel. Ind. 6 (1870),
Skofitzia HASSK. Oest. Bot. Zeitschr. 147 (1872).

Benth. and Hook., *Gen. Pl.* III, 853; Durand, *Ind. Gen. Phan.* 435; Engler and Prantl, *Nat. Pflanz.* 2, IV, 68 (Schönland); Schenck, *Palaeophyt.* 367.

Living species: 32; tropical and temperate America. N. America, 5; S. Sts., 4; E. Sts., 2; Rocky mts., 1.

Fossil species: ? *Commelinacites*, amber (*Conwentz*).

Tradescantia virginica LINN. Spec. 288 (1753).
T. cristata WALT. Fl. Car. 119 (1788).
T. ohioensis RAF. N. Fl. 86 (1836).

Wats. and Coult., Gray's Man. 6 ed. 539; Britt., Fl. N. J. 248; Webb., Fl. Neb. 107; Chap., Fl. S. St. 498; Upham, Fl. Minn. 149; Coult., Fl. Colo. 355; Engl. Schönland, Nat. Pflanz. II, 4, 68; Wats., King Exp. 359; Roth., Wheel. Exp. 274; Cov., Fl. Ark. 226.

Mexico to Central America?

North America: N. Y. to Minn., Dak. and Wyoming; S. to Fla. and N. Mex.

Minn. valley: Throughout; meadows and edges of woods.

HERB: *Sheldon 747*, Sleepy Eye; *Taylor 176*, Janesville; *Taglor 578*, Minnesota lake; *Taylor 783*, Glenwood; *Ballard 368*, Helena, Scott Co.; *Ballard 58*, Chaska; *Herrick 319*, Minneapolis; *Herrick 320*, Minneapolis; *Kassube 250*, Minneapolis; *Holzinger 294*, Winona Co.; *Oestlund 209*, Minneapolis; *Sandberg 597*, Cannon Falls; *Herb. Sheld. 1711*, Minneapolis; *Hammond 50*, Lake City; *Wickersheim 130*, Idlewild.

XV. PONTEDERIACEAE. Pickerel-Weed Family.

Endlicher, *Gen. Pl.* 137 (1840); Benth. and Hook., *Gen. Pl.* III, 836 (1883); Schönland *in Engler and Prantl, Nat. Pflanz.* 2, IV, 70 (1887).

Genera: 6; warmer regions, except Europe.

Species: 23; principally tropical.

PONTEDERIA LINN. Gen. 291 (1737).
Unisema RAF. Journ. Phys. LXXXIX, 261 (1819).
Reussia ENDL. Gen. 139 (1840).

Engler and Prantl, *Nat. Pflanz.* 2. IV, 73, 74 (Schönland); Durand, *Ind. Gen. Phan.* 433; Benth. and Hook., *Gen. Pl.* III, 837.

Living species: 3-4; N. America, 1; S. America, 3.

Pontederia cordata LINN. Spec. 288 (1753).
P. mucronata RAF. Med. Rep. XI, 352 (1808).
P. angustifolia PURSH, Fl. Am. I, 233 (1814).

Wats. and Coult., Gray's Man. 6 ed. 536; Britt., Fl. N. J. 246; Mac., Fl. Can. II, 53; Upham, Fl. Minn. 149; Chap., Fl. S. St. 496; Engl. Schönl., Nat. Pflanz. II, 4, 73; Cov., Fl. Ark. 226.

North America: N. S., Q., Ont. to L. Huron and Saskatchewan; S. to N. J. and Fla.; W. to Minn., Ark. and Tex.

Minn. valley: N. E. and N. district; forest lakes; local and infrequent.

HETERANTHERA RUIZ and PAV. Prodr, 9, t, 2 (1794).
Schollera SCHREB. Gen. Pl. II, 785 (1791) *not Roth* (1788).
Leptanthus MICHX. Fl. Bor.-Am. I, 24 (1803).
Buchosia VELLOZ. Fl. Flum. 33 (1827).

Benth. and Hook., *Gen. Pl.* III, 838; Durand, *Ind. Gen. Phan.* 433; Engler and Prantl, *Nat. Pflanz.* 2, IV, 74 (Schönland); O. Kuntze, *Rev. Gen.* II, 719.

Living species: 9; tropical Africa; N. and S. America. N. America, 3–4; California, 1; S. Sts., 1; Canada, 1; E. Sts., 3.

Heteranthera dubia (JACQ.).
Commelina dubia JACQ. Icon. (1768).
Schollera graminifolia WILLD. Nov. Act. Soc. Berl. III, 438 (1801).
Leptanthus gramineus MICHX. Fl. N. Am. I, 25 (1803).
Heteranthera graminea VAHL, Enum. II, 45 (1806).
Schollera graminea BARTR. Fl. N. Am. II, 54 (1822).
S. dubia OK. Rev. Gen. II, 719 (1891).

Wats. and Coult., Gray's Man. 6 ed. 536; Britt., Fl, N. J. 247; Mac., Fl. Can. II, 54; Upham, Fl. Minn, 149; Chap. Fl. S. St. 497; Engl. Schönl., Nat. Pflanz. II, 4, 74; Wats., Fl. Calif. II, 187; Wats., King. Exp. 359; Cov., Fl. Ark. 226.

Cuba.

North America: Ont. and Ott. to N. Eng., N. J. and N. Car.; W. to Minn., E. Kan., Ark. and Tex.; also, Oregon and California.

Minn. valley: Throughout; mud beside lakes or streams, or completely aquatic.

HERB.: *Sheldon 718*, Sleepy Eye; *Sheldon 1430*, Lake Benton; *Sheldon 813*, Sigel township, Brown Co.; *Sheldon 1135*, Springfield; *Sheldon 1508*, Lake Benton; *Taylor 987*, Glenwood; *MacMillan 19*, Morton; *Herrick 318*, Minneapolis; *Oestlund 208*, Minnehaha; *Sandberg 596*, Belle Creek.

XVI. JUNCACEAE. Rush Family.

Endlicher, *Gen. Pl.* 130 (1840); Benth. and Hook., *Gen. Pl.* III, 861 (1883); Buchenau *in Engler and Prantl, Nat. Pflanz.* 2, V, 1 (1887).

Genera: 7; 2, cosmopolitan; 5, southern hemisphere.
Species: 190 ±; 5–6, extinct.

JUNCUS LINN. Gen. 295 (1737) p. p.
Tenagaia REICH. Ic Fl. Germ. IX, 22 (1847).
Cephaloxys DESVX. Journ. Bot. I, 324 (1808).

Benth. and Hook., *Gen. Pl.* III, 867; Durand, *Ind. Gen. Phan.* 436; Engler and Prantl, *Nat. Pflanz.* 2, V, 5 (Buchenau); Schenck, *Palaeophyt.* 363.

Living species: 176 (Buch. Mon.); cosmopolitan. Europe, 45; Russia, 35; Russian Europe, 30; North America, 60; Canada, 37–43; E. Sts., 27–30; California, 28–32; Rocky mts., 4–5; Pl. King., 9; Pl. Wheel., 14; S. Sts., 16–20.

Fossil species, 3–4, Tertiary; Greenland and Spitzbergen (*Heer*).

Juncus tenuis WILLD. Spec. II, 214 (1799).

J. gracilis SM. Comp. Fl. Brit. 55 (1800).
J. bicornis MICHX. Fl. N. Am. I, 191 (1803).
J. parviflorus POIR. Enc. Meth. Suppl. III, 160 (1813).
J. macer S. F. GRAY, Nat. Arr. Brit. Pl. II, 164 (1821).
J. aristatus LINK, Enum. 2948 (1822).
J. gesneri SM. Engl. Fl. II, 167 (1824).
J. chloroticus SCHULTES, R. and S. Syst. VII, 240 (1829).
J. smithii KUNTH, Enum. III, 349 (1841).
J. lucidus HOCHST. Fl. Az. 24 (1848).
J. germanorum STEUD. Syn. Glum. II, 305 (1855).
J. vacillans STEUD. Syn. Glum. II, 305 (1855).
J. compressus X *effusus* O. KUNTZE, Tasch. Fl. Leip. 55 (1867).

Wats. and Coult., Gray's Man. 542; Britt., Fl. N. J. 250; Mac., Fl. Can. II, 59; Upham, Fl. Minn. 148; Chap., Fl. S. St. 493; Wats., Fl. Calif. II, 207; Buch., Mon. Junc. 193; Coult. Fl. Colo. 358; Webb., Fl. Neb. 107; Webb., Fl. Neb. 107; Richt., Pl. Eur. 177; Hook., Fl. Gt. Brit. 416; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 136; Wats., King. Exp. 493; Roth., Wheel. Exp. 273; Cov. Fl. Ark. 227.

Central Europe; Tristan d'Acunha and New Zealand (intro. ?).

North America: N. S., to Hudson Bay, Saskatchewan, Bear lake and Vancouver; S. to Oregon, S. Calif. and N. Mex.; E. to N. Eng., Fla. and W. Indies.

Minn. valley: Throughout; abundant; low marshy or damp places.

HERB.: *Sheldon 878*, Sleepy Eye; *Sheldon 1443*, Pipestone; *Ballard 432*, Prior's lake, Scott Co.; *Sheldon 1366*, Lake Benton; *Taylor 635*, Minnesota lake; *Herrick 317*, Minneapolis; *Bailey 125*, Vermilion lake; *Oestlund 205*, Ramsey Co.; *Bailey 486*, Agate bay; *Sandberg, 594*, Red Wing; *MacM. and Sheld. 67*, Brainerd.

Juncus vaseyi ENGELM. Rev. N. Amer. Junc. II, 448 (1866).

Wats. and Coult., Gray's Man 6 ed. 542; Upham, Fl. Minn. 148; Coult., Fl. Colo. 358; Buch., Mon. Junc. 201; Engl. Buch., Nat. Pflanz. II. 5, 5; Wats., King Exp. 492; Mac., Fl. Can. II, 58.

North America: Lake Nipigon to Saskatchewan and

Brandon, Man.; S. to Colo.; E. to Ill., Minn., Mich. and in N. Maine.

Minn. valley: Reported from forest district and S. E. edge; infrequent; wet meadows.

Juncus balticus WILLD. var. **litoralis** ENGELM. Rev. Amer. Junc. II, 441 (1866).

Wats. and Coult., Gray's Man. 6 ed. 540; Mac., Fl. Can. II, 56; Upham, Fl. Minn. 148; Wats., Fl. Calif. II, 205; Coult., Fl. Colo. 357; Buch., Mon. Junc. 215; ? Hook., Fl. Gt. Brit. 415: Miyabe, Fl. Kur. 266?; Roth., Wheel. Exp. 272?; Hart., Fl. Scand. I, 420 (spec.); Rothr., Alask. 457?.

S. America, Patagonia; Pyrenees mts. (*spec.*).

North America: N. S., Q., to L. Huron and L. Winnipeg; S. to Mass., Penn., Minn., Ohio, and Colo.?

Minn. valley: Reported from forest district; infrequent; marshes and swamps.

HERB.: *? Oestlund 204*, Ramsey Co.

Juncus filiformis LINN. Spec. 326 (1753).

J. arcticus LAP. Abr. 193 (1813).
J. trichodes STEUD. Syn. Glum. II, 306 (1855).
J. transilvanicus SCHUR. Enum. 684 (1866).

Wats. and Coult., Gray's Man. 6 ed. 540; Webb., Fl. Neb. 107; Mac., Fl. Can. II, 55; Upham, Fl. Minn. 148; Coult., Fl. Colo. 357; Buch., Mon. Junc. 224; Richt., Pl. Eur. 178; Led., Fl. Ross. IV, 223; Hook., Fl. Gt. Brit. 415; Herd., Fl. Eur. Russ. 136; Engl. Buchenau, Nat. Pflanz. II, 5, 5; Mac., Fl. Can. II, 365; Wats., King Exp. 492; Hart. Fl. Scand. 420.

Europe to Apennines; N. Asia; Patagonia.

North America: Greenland and Newf. to Little Slave lake, Bear lake and Brit. Col.; Selkirk summits; S. to N. Eng., Mich., Minn., Neb. and Colo.

Minn. valley: Reported from N. E. district; rare; marshes and swamps.

HERB.: *Bailey 17*, Vermilion lake; *Roberts 135*, Knife river.

Juncus effusus LINN. Spec. 326 (1753).

J. conglomeratus LINN. Spec. 326 (1753) *pro parte.*
J. bogotensis HBK. N. Gen. Et. Spec. I, 235 (1815).
J. communis var. *effusus* E. MEY. Mon. Junc. 20 (1819).
J. laevis var. *effusus* WALLR. Sched. Crit. I, 142 (1822).
J. aemulans LIEBM. Mex. Junc. 38 (1850).

Wats. and Coult., Gray's Man. 6 ed. 540; Britt., Fl. N. J. 249; Mac., Fl. Can. II, 55; Upham, Fl. Minn. 148; Chap., Fl. S. St. 493; Buch., Mon. Junc. 228; Led., Fl. Ross. IV, 221; Hook., Fl. Gt. Brit. 414; Richt., Pl. Eur. 178; Nym., Fl. Eur.; Miyabe, Fl. Kur. 266; Herd, Fl. Eur. Russ. 136; Engl. Buch., Nat Pflanz. II, 5, 5; Wats., King Exp. 491; Cov., Fl. Ark. 226; Hart., Fl. Scand. I, 419–420.

Europe; Asia; Africa; Australia; Central America.

North America: Newf., Hudson Bay to Vancouver; S., E. of Rocky mts., to Gulf of Mex. and Fla.

Minn. valley: N. edge; marshy or swampy ground; rare.

HERB.: *Bailey 520,* Agate Bay; *Sandberg 593,* Chisago Co.

Juncus nodosus LINN. var. **genuinus** ENGELM. Rev. Junc. II, 471 (1868).

J. rostkovii E. MEY. Syn. Junc. 26 (1822).

J. nodosus Auct.

Wats. and Coult., Gray's Man. 6 ed. 545; Britt., Fl. N. J. 251; Mac., Fl. Can. II, 634—excl. syn.; Upham, Fl. Minn. 149; Webb., Fl. Neb. 107; Wats., Fl. Calif. II, 208; Coult., Fl. Colo. 358; Buch., Mon. Junc. 314, 316; ?Led., Fl. Ross. IV, 235; Wats., King Exp. 494; Cov., Fl. Ark. 227; Webb., Appx. Neb. 25.

S. Russia ?

North America: N. S., N. Br., Hudson Bay, Bear lake to Brit. Col. and Saskatchewan; S. to Oregon and Calif.; S. to Minn., Iowa, N. Ind., Neb., Ark.; E. to N. Eng. and N. J.

Minn. valley: Throughout; common; marshes, swamps and banks.

HERB.: *Ballard 837,* Page lake, Carver Co.; *Ballard 896,* St. Bonifacius; *Taylor 1085,* Glenwood; *Sheldon 1158,* New Ulm; *Taylor 639,* Minnesota lake; *Sheldon 1397,* Verdi, Lincoln Co.; *Sheldon 1458,* Pipestone; *Sandberg 595,* Red Wing; *Oestlund 206,* Hennepin Co.; *Oestlund 207,* Ramsey Co.; *MacM.* and *Sheld. 23,* Brainerd.

Juncus nodosus LINN. var. **megacephalus** TORR. Fl. N. Y. II, 327 (1843).

J. megacephalus WOOD, Bot. 724 (1861).

Wats. and Coult., Gray's Man. 6 ed. 545; Britt., Fl. N. J. 251; Mac., Fl. Can. II. 63; Upham, Fl. Minn. 149; Coult., Fl. Colo. 358; Buch., Mon. Junc. 316; Wats., Fl. Calif. II, 208; Roth., Wheel. Exp. 273.

North America: Ont. to Saskatchewan, Colo., Oregon, Nev., Arizona, Calif. and Tex.; E. to N. Y., Ohio and N. J.

Minn. valley: Throughout; principally westward; habitat with the type.

HERB.: *Sheldon 1032a,* New Ulm; *Sheldon 1071,* Springfield; *Sheldon 1462,* Pipestone.

Juncus canadensis J. GAY, var. **coarctatus** ENGELM. Rev. Junc. 474 (1868).

J. paradoxus AUCT. AMER. in part.

J. acuminatus AUCT. AMER. before ENGELM. not *Michx.*

Wats. and Coult., Gray's Man. 6 ed. 546; Buchenau, Mon. Junc. 271; Mac., Fl. Can. II, 63; Britt., Fl. N. J. 251; Coult., Fl. Colo. 358.

North America: N. S., N. E. T. and Ont. to N. Eng. and N. J.; W. to Minn., Colo. and Mont.

Minn. valley: Forest district; wet meadows and banks.

HERB.: *Taylor 85*, Elysian; *Sheldon 205*, Madison Lake; *Bailey 276*, St. Louis river; *MacM.* and *Sheld. 68*, Brainerd; *Juni 27*, Little Marais.

Juncus canadensis J. GAY var. **longecaudatus** ENGELM. Rev. Junc. II, 474 (1868).

J. paradoxus AUCT. AMER.
J. polycephalus var. *paradoxus* TORR. Fl. N. Y. II, 327 (1843).

Wats. and Coult., Gray's Man. 6 ed. 545; ?Britt., Fl. N. J. 251; Upham, Fl. Minn. 149; Mac., Fl. Can. II, 64; Coult., Fl. Colo. 358; Buch., Mon. Junc. 271; Wats., King Exp. 495; Cov., Fl. Ark. 227.

Central Amer. to Venezuela?

North America: N. Br., Ont. to S. Ste. Marie and Minn.; E. to Mass. and N. J.; S. to S. Car. and La.; W. to Ark.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; wet places.

HERB.: *Juni 17*, Little Marais; *Bailey 276*, St. Louis river; *Taylor 637*, Minnesota lake.

Juncus acuminatus MICHX. var. **legitimus** ENGELM. Rev. Junc. II, 435 (1868).

J. acuminatus MICHX. Fl. N. Am. I, 192 (1803).
J. pallescens E. MEY. Syn. Junc. 31 (1822).
J. paradoxus E. MEY. Syn. Junc. 30 (1822).
J. fraternus KUNTH, Enum. III, 340 (1841).
J. debilis GRAY, Man. ed. II, 480 (1856) *pro parte.*
J. pondii WOOD, Bot. 724 (1861).

Wats. and Coult., Gray's Man. 6 ed. 544; Britt., Fl. N. J. 250; Upham, Fl. Minn. 148; Mac., Fl. Can. II, 62; Buch., Mon. Junc. 333; Chap., Fl. S. St. 494; Wats., King Exp. 494; Cov., Fl. Ark. 226.

North America: N. Eng. to Ont. and Minn.; S. to N. J. and Ga.; W. to Kan., Nev.? and Tex.

Minn. valley: Forest district; infrequent; wet places and meadows.

HERB.: *Ballard 280*, Jordan, Scott Co.

CYPERELLA CRAM. Tent. Bot. 41 (1744).

Juncastrum HEIST. Syst. 12 (1748).
Ischaemon SCHMIED. Gesn. Hist. Pl. 13 (1759) *not Linn.*
Luzula DC. Fl. Fr. III, 158 (1805).
Juncodes ADANS. Fam. II, 47 (1763).
Leucophoba EHRH. Phyt. n. 73 (1793).
Luciola SM. Eng. Fl. II, 177 (1824).

Benth. and Hook., *Gen. Pl.* III, 436; Durand, *Ind. Gen. Phan.* 436; Engler and Prantl, *Nat. Pflanz.* 2, V, 7 (Buchenau); O. Kuntze, *Rev. Gen.* II, 722.

Living species: 40±; temperate regions and tropical mts. Europe, 26; Russia, 10; Russian Europe, 10; Canada, 8–10; California, 5; E. Sts., 5; Rocky mts., 6; S. Sts., 3; Pl. King, 4; U. S., 10.

Cyperella campestris (LINN.) var. **multiflora** (EHRH.).

Juncus campestris var. *G.* LINN. Spec. ed. 2, 469 (1762).
Juncus multiflorus EHRH. Calam. Exsicc (1791).
J. intermedius THUILL. Fl. Par. Env. 178 (1799).
J. erectus PERS. Syn. I, 386 (1805).
J. nemorosus HOST. Icon. Gram. 97 (1805).
Luzula erecta DESV. Mem. Luz. 156 (1808).
L. multiflora LEJ. Fl. Env. Spa, 169 (1811).
L. intermedia var. *multiflora* SPENN. Fl. Frib. 177 (1825).
L. pallescens HOPPE, Sturm. Deutsch. Fl. XVIII, 77 (1839).
L. campestris AUCT. AMER. et VET. ORB.
L. campestris vars. *pallescens* and *comosa* MAC. Fl. Can. II, 67 (1888).
L. campestris DC. var. *multiflora* L. CELAKOV. Prodr.Böhm.85(1869).

Wats. and Coult., Gray's Man. 6 ed. 546; Buchen., Mon. Junc. 161; Britt., Fl. N. J. 251; Upham, Fl. Minn. 148; Chap., Fl. S. St. 493; Wats., Fl. Calif. II, 203; Richt., Pl. Eur. 186; Led., Fl. Ross. IV, 216; Hook., Fl. Gt. Brit. 420; Miyabe, Fl. Kur. 267; Herd., Fl. Eur. Russ. 136; Engl. Buchen., Nat. Pflanz. II, 5, 7; Wats., King Exp. 355; Cov., Fl. Ark. 227; Hart., Fl. Scand. I, 426; Rothr., Alask. 456.

Europe; Asia; N. Africa; N. Zealand.

North America: Greenland to Alaska; S. to Plumas Co., Calif. From N. Eng. to Fla and W. to Minn., Ark. and Texas.

Minn. valley: Forest district; rare; dry fields and hills.

HERB.: *Sandberg 592*, Chisago Co.; *Sheldon 1621*, Twin lake, Hennepin Co.

XVII. LILIACEAE. Lily Family.

Endlicher, *Gen. Pl.* 133, 139, 152 (1840); Benth. and Hook., *Gen. Pl.* III, 748 (1883); Engler *in Engler and Prantl, Nat. Pflanz.* 2, V, 10 (1887).

Genera: 200; cosmopolitan; most abundant in subtropical and temperate regions. Extinct, 6–7.

Species: 2500; extinct, 100–150; doubtful.

TOFIELDIA HUDS. Fl. Angl. ed. 2, 157 (1778).

Heriteria SCHRANK, Baier. Fl. I, 133 (1789).
Hebelia GMEL. Fl. Bad. II, 117 (1806.
Triantha NUTT. Gen. I, 235 (1818).
Isidrogalvia R. and P. Fl. Per. and Chile, III, 69 (1802).

Benth. and Hook., *Gen. Pl.* III, 828; Durand, *Ind. Gen. Phan.* 431; Engler and Prantl, *Nat. Pflanz.* 2, V, 20 (Engler).

Living species: 14; N. temperate and Arctic regions, and in the Andes. Japan, 5; N. America, 3; Canada, 1; S. Sts., 3; California, 2; Himalayas, 1; Andes, 1–2.

Tofieldia glutinosa (MICHX.) WILLD. Spec. IV (1805).

Narthecium glutinosum MICHX. Fl. N. Am. I, 210 (1803).

Melanthium aspericaule POIR. ex Steud. Nom. II, 690 (1813?).

Wats. and Coult., Gray's Man. 6 ed. 532; Upham,, Fl. Minn. 145; Mac., Fl. Can. II, 44; Wats., Fl. Calif. II, 184; Chap., Fl. S. St. 492; Coult., Fl. Colo. 354; Led., Fl. Ross. IV, 211; Rothr., Alask. 456.

Arctic Russia, Kamtk. and Siberia.

North America: Anticosti, N. Br., Q., Ont. to Man., Athabasca, Hudson Bay, Bear Lake and Alaska; W. to Rocky mts.; S. to California and Oregon; Wyoming; S. to Minn., Mich., Ind., N. Y., Maine and in Alleghenies to Tenn. and N. Car.

Minn. valley: N. and forest districts; moist grounds and shaded banks.

HERB.: *Taylor 733*, Glenwood; *Herrick 305*, Minneapolis; *Herrick 306*, Minneapolis; *Sandberg 572*, Goodhue Co.; *Herb. Sheld. 1755*, Ramsey Co.; *Kassube 224*, Minneapolis.

ZIGADENUS MICHX. Fl. N. Am. I, 213 (1803).

Monadenus and **Chitonia** SALISB. Fragm. 51 (1822?).

Anticlea and **Amiantanthium** KUNTH, Enum. IV, 179, 191 (1843).

Amianthium A. GRAY, Ann. Lyc. N. Y. IV, 121 (1837).

Chrosperma RAF. ex. Engler. l. c. (1887).

Endooles SALISB. Fragm. (1822?).

Stenanthium A. GRAY, Ann. Lyc. N. Y. IV, 119 (1837).

Schoenocaulon A. GRAY, Ann. Lyc. N. Y. IV, 127 (1837).

Asagraya LINDL. Bot. Reg. t. 33 (1839).

Sabadilla BRANDT, Hayne, Arzneig. XIII, f. 27 (1836).

Benth. and Hook., *Gen. Pl.* III, 835, 836; Durand, *Ind. Gen. Phan.* 432; Engler and Prantl, *Nat. Pflanz.* 2, V, 23, 24 (Engler).

Living species: 20; N. America and Mexico, 17; C. Amer., 1; Saghalin, 1; Siberia, 1; E. Sts., 11; California, 3–4; S. Sts., 5–6; Canada, 4–5; Rocky mts., 5.

Zigadenus elegans PURSH, Fl. Am. 241 (1814).

Z. chloranthus RICH. Hook. Fl. Bor.-Am. II, 177 (1840).

Z. glaucus HOOK. Fl. Bor.-Am. II, 178 (1840).

Wats. and Coult., Gray's Man. 6 ed. 535; Mac., Fl. Can. II, 52; Upham, Fl. Minn. 144; Webb., Fl. Neb. 107; Chap., Fl. S. St. 488; Coult., Fl. Colo. 353; Wats., Fl. Calif. II, 183; Engl., Nat. Pflanz. II, 5, 24; Roth., Wheel. Exp. 271.

North America: Newf., Anticosti, to N. Eng. and N. J.; W. to Oregon and Behring's Straits, 62° 45′ N. lat.; S. to Nev., N. Mex., Arizona, Neb., Ill., Minn. and Tex.?

Minn. valley: Throughout; common; grassy places, fields, hillsides and meadows.

HERB.: *Sheldon 744*, Sleepy Eye; *Sheldon 553*, Waseca; *Sheldon 1539*, Lake Benton; *Taylor 472*, Janesville; *Ballard 166*, Shakopee; *Sandberg 571*, Red Wing; *Oestlund 198*, Hennepin Co.; *Herrick 304*, Minneapolis; *Kassube 240*, Minneapolis; *Herb. Sheld. 1918*, Ramsey Co.; *Herb. Moyer 237*, Camp Release, Chippewa Co.

MELANTHIUM LINN. Gen. ed. II, Appx. (1742).

Leimanthium WILLD. Gesell. Nat. Berl. Mag. II, 24 (1802).

Benth. and Hook., *Gen. Pl.* III. 834; Durand, *Ind. Gen. Phan.* 432; Engler and Prantl, *Nat. Pflanz.* 2, V, 24 (Engler).

Living species: 3; Atlantic N. America. E. Sts., 3; Canada, 1; S. Sts., 1.

Melanthium virginicum LINN. Spec. 339 (1753).

Helonias virginica SIMS, Bot. Mag. 285 (——)?
Leimanthium virginicum WILLD. Mag. Naturf. II, 24 (1808).
Zygadenus virginicus KUNTH, Enum. IV, 195 (1843).
Melanthium hybridum PURSH, Fl. Am. 242 (1814).
Leimanthium hybridum HOOK. Fl. Bor.-Am. II, 177 (1840).

Wats. and Coult., Gray's Man. 6 ed. 533; Mac., Fl. Can. II, 51; Britt., Fl. N. J. 245; Chap., Fl. S. St. 488; Engl. Nat. Pflanz. II, 5, 24; Cov., Fl. Ark. 226.

North America: Ont.? to N. Eng.; S. to N. Car. and Fla.? W. to Minn., Ark. and Tex.

Minn. valley: Reported from N. E. district; rare or doubtful; wet meadows.

VERATRUM LINN. Gen. 769 (1737).

Acedilanthus TRAUTV. Midden. Reise, Fl. Okh. 94 (1864?).

Benth. and Hook., *Gen. Pl.* III. 834; Durand, *Ind. Gen. Phan.* 432; Engler and Prantl, *Nat. Pflanz.* 2, V, 24 (Engler).

Living species: 9; forest regions of N. hemisphere. Russia, 4; Europe, 2; N. America, 5; California, 2; E. Sts., 3; Canada, 1; S. Sts., 3; Rocky mts., 1; Pl. King, 2; Pl. Wheel., 2.

Veratrum viride AIT. Hort. Kew. III, 896 (1789).

V. album MICHX. Fl. N. Am. I, 249 (1803).
Helonias viridis SIMS, Bot. Mag. 1096 (——)?
Veratrum eschscholtzii GRAY, in Rothr. Alask. 456 (1867).
V. album var. *eschscholtzii* DAWSON, Bound Rep. 374 (1875).
? *V. album* var. *viridis* REGEL, Fl. Ussur. 153 (1862).

Wats. and Coult., Gray's Man. 6 ed. 534; Britt., Fl. N. J. 245; Mac., Fl. Can. II, 51; Upham, Fl. Minn., 144; Chap., Fl. S. St. 489; Wats., Fl. Calif. II, 182; Trautv., Fl. Sib. 115?; Wats., King Exp. 344; Engl., Nat. Pflanz. II, 5, 24.

Valley of the Lena river in Siberia?

North America: N. Br., Q., Ont. to Man., Brit. Col., Vancouver and Sitka, Alaska; S. to Oregon; E. to Mo., Ga. and Atlantic coast.

Minn. valley: Reported from N. edge; rare; swamps and marshes.

UVULARIA LINN. Gen. 263 (1737).

Oakesia S. WATS. Proc. Am. Acad. XIV, 269 (1879), *not Tuck.*

Benth. and Hook., *Gen. Pl.* III, 830; Durand, *Ind. Gen. Phan.* 431; Engler and Prantl, *Nat. Pflanz.* 2, V, 27 (Engler).

Living species: 4; Atlantic N. America.

Uvularia grandiflora SM. Exot. Fl. 99 (1804).

? *U. lanceolata* WILLD. Spec. II, 94 (1799).

U. perfoliata var. *major* MICHX. Fl. I, 199 (1803).

Wats. and Coult., Gray's Man. 6 ed. 528; Upham, Fl. Minn. 145; Mac., Fl. Can. II, 45; Chap., Fl. S. St. 487; Engl., Nat. Pflanz. II, 5, 27; Cov., Fl. Ark. 225.

North America: Q., Ont. to Owen Sound and Lake Huron; S. to N. Eng., N. Y. and Ga.; W. to Minn., Mo. and Ark.

Minn. valley: Throughout; woods and shaded banks of lakes and streams.

HERB.: *Ballard 78,* Chaska; *Oestlund 199,* Ramsey Co.; *Kassube 241,* Minneapolis; *Herrick 308,* Minneapolis; *Bailey 233,* Vermilion lake; *Sandberg 575,* Goodhue Co.; *Hammond 42,* Lake City; *Herb. Moyer 238,* Montevideo.

Uvularia perfoliata LINN. Spec. 304 (1753).

U. perfoliata var. *minor* MICHX. Fl. Am. I, 199 (1803).

Wats. and Coult., Gray's Man. 6 ed. 527; Britt., Fl. N. J. 244; Mac., Fl. Can. II, 44; Chap., Fl. S. St. 487.

North America: Ont.? to N. Eng., N. J. and Fla.; W. to Minn., Dak. and Mo.

Minn. valley: Throughout; woods and shaded banks of lakes and streams; abundant.

HERB.: *Taylor 136,* Janesville; *Sheldon 144,* Madison Lake, Blue Earth Co.; *Herrick 307,* Minneapolis; *Sandberg 573,* Red Wing; *Sandberg 574,* Cannon Falls; *Herb. Sheld. 1893,* Minneapolis; *Herb. Wickersheim 123,* Idlewild, Lincoln Co.

Uvularia sessilifolia LINN. Spec. 305 (1753).

Oakesia sessilifolia S. WATSON, Proc. Am. Acad. XIV, 269 (1879).

Wats. and Coult., Gray's Man. 6 ed. 528; Britt., Fl. N. J. 244; Mac., Fl. Can. II, 45; Upham, Fl. Minn. 145; Webb., Fl. Neb. 107; Chap., Fl. S. St. 487; Cov., Fl. Ark. 225.

North America: N. Br., Q., Ont. to N. Eng., N. J. and Fla.; W. to Minn., Dak., Neb., Kan. and Ark.

Minn. valley: Throughout; principally in forest district; woods and shaded banks of lakes and streams.

HERB.: *Sandberg 576*, Black Oak, Goodhue Co.; *Sandberg 577*, Goodhue Co.; *Holzinger 282*, "western Minnesota"; *Kassube 242*, Ramsey Co.; *Herb. Sheld. 1706*, Minneapolis; *1896*, Ramsey Co.

ALLIUM LINN. Gen. 294 (1737).

Hexonychia, Calliprena, Raphione, Xylorhiza, Berenice, Porrum, Cepa, Phyllodolon, Camarilla, Schoenissa, Butomissa, Hylogeton, Molyza, Canidia, Julus, Saturnia, Briseis SALISB. Fragm. Gen. 88–94 (1822?).

Schoenoprasum HBK. Nov. Gen. et Spec. I, 277 (1815).
Codonoprasum REICHB. Fl. Germ. Exc. 114 (1830).
Ophioscorodon WALLR. Sched. Crit. 129 (1822).
Moenchia MEDIC. Act. Palat. VI, 343 (——).
Moly MOENCH, Meth. 286 (1794).
Saturnia MARATTI, Diss. Romul. 18, t. 2 (1772).
Nectaroscordum LINDL. Bot. Reg. t. 1912 (1836).
Trigonea PARLAT. Occhio, 161 (1839).

Benth. and Hook., *Gen. Pl.* III, 802; Durand, *Ind. Gen. Phan.* 427; Engler and Prantl, *Nat. Pflanz.* 2, V, 55 (Engler).

Living species: 250; S. and Mid. Europe; extra-tropical Asia; N. Africa; N. America to Mexico. Europe, 80; Russia, 73; European Russia, 40; N. America, 30–35; California, 25; Canada, 10; S. Sts., 7–8; Rocky mts., 14; E. Sts., 7; Pl. King, 8; Pl. Wheel., 6; S. America, 3–4; centers in Himalaya region.

Allium canadense KALM, Linn. Spec. 1195 (1762).

Wats. and Coult., Gray's Man. 6 ed. 522; Britt., Fl. N. J. 241; Upham, Fl. Minn. 147; Mac., Fl. Can. II, 36; Webb., Fl. Neb. 108; Coult., Fl. Colo. 348; Chap., Fl. S. St. 482; Wats., King. Exp. 487; Cov., Fl. Ark. 225.

North America: N. Eng., Ont. to Minn.; S. to N. J. and Fla.; W. to Dak., Neb. and Tex.

Minn. valley: Throughout; common; wet fields and along bases of hills.

HERB.: *Taylor 518*, Mud lake, Waseca Co.; *Taylor 621*, Minnesota lake; *Ballard 106*, Carver; *Ballard 355*, Helena, Scott Co.; *Sandberg 591*, Vasa; *MacM.* and *Sheld. 66*, Brainerd; *Herb. Sheld. 1916*, Minneapolis; *Herb. Moyer 242*, Montevideo.

Allium stellatum NUTT. Gen. I, 214 (1818).

Wats. and Coult., Gray's Man. 6 ed. 522; Upham, Fl. Minn. 147; Mac., Fl. Can. II, 36; Coult., Fl. Colo. 348; Webb., Fl. Neb. 108; Wats., King Exp. 486.

North America: Saskatchewan and Brit. Col. to Wyoming, Neb., Dak., Minn., W. Ills. and Mo.

Minn. valley: Prairie district and far N. E.; N. edge; high bluffs and headlands.

HERB.: *Sheldon 1202*, New Ulm; *Sheldon 1518a*, Lake Benton; *Sheldon 952*, Redwood Falls; *Sheldon 1472*, Pipestone, *Sheldon 971*, Sleepy Eye; *Gedge 16*, Tracy, Lyon Co.; *Oestlund 203*, Minneapolis.

Allium cernuum ROTH, Cat. Fasc. II, 2 (1800).

? *A. tricorne* POIR. Suppl. Enc. Meth. I, 270 (1810).
A. stellatum HOOK. Fl. Bor.-Am. II, 184 (1840) in part.

Wats. and Coult., Gray's Man. 6 ed. 522; Upham, Fl. Minn. 147; Mac., Fl. Can. II, 35; Chap., Fl. S. St. 482; Coult., Fl. Colo. 347; Roth., Wheel. Exp. 269; Wats., King Exp. 486.

North America: Lake of the Woods and Souris river to Brit. Col., Vancouver and Nootka; S. to Oregon and N. Mex.; E. to S. Car. and Alleghenies.

Minn. valley: Prairie district and N. W. and N. E. districts; rather rare; plains and sunny banks.

HERB.: *Taylor 876*, Glenwood; *Holzinger 293*, Winona; *Kassube 249*, Minneapolis; *Sandberg 590*, Goodhue Co.

Allium schoenoprasum LINN. Spec. 301 (1753).

Cepa schoenoprasum MOENCH, Meth. 244 (1794).
Allium foliosum CLAR. Red. Lil. 24 (1802).
A. acutum SPRENG. Pug. I, 28 (1813).
A. tenuifolium POHL. Tent. Fl. Böhm. II, 10 (1815).
A. palustre POURR. in Lag. Pl. Matr. 13 (1816).
A. sibiricum R. and S. Syst. VII, 1027 (1829).
A. sibiricum schoenoprasioides FR. in Kunth, Enum IV, 685 (1841).
A. schoenoprasum var. *alpinum* KOCH, Syn. ed. 2, 833 (1845).
A. punctulatum SCHLECHT. Linn. XIX, 401 (1847).

Wats. and Coult., Gray's Man. 6 ed. 522; Mac., Fl. Can. II, 35; Upham, Fl. Minn. 147; Coult., Fl. Colo. 347; Led., Fl. Ross. IV, 166; Richt., Pl. Eur. 202; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 406; Herd., Fl. Eur. Russ. 132; Engl., Nat. Pflanz. II, 5, 56; Wats., King Exp. 485; Hart., Scand. Fl. I, 407; Rothr., Alask. 456.

All Europe and Siberia to Himalayas and Japan.

North America: Labrador to Bear lake and the Yukon at lat. 63° N.; S. to Brit. Col., Oregon and Wyoming; E. to Dak., Minn., Gt. Lakes, N. Br. and N. S.

Minn. valley: Reported from N. edge; rare; shores of forest lakes and river banks.

Allium tricoccum AIT. Hort. Kew. I, 428 (1789).

Wats. and Coult., Gray's Man. 6 ed. 521; Britt., Fl. N. J. 241; Chap., Fl. S. St. 482; Upham, Fl. Minn. 147; Mac., Fl. Can. II, 34; ? Wats., King Exp. 485.

North America: Ont. to N. of Lake Superior; S. to W. N. Eng., N. J. and mts. of N. Car.; W. to Minn. and Iowa.

Minn. valley: Throughout; not infrequent; woods and banks of streams and lakes.

HERB.: *Taylor 622,* Minnesota lake; *Ballard 291,* Jordan, Scott Co.; *Taylor 127,* Janesville; *Sheldon 289,* Madison Lake, Blue Earth Co.; *Sheldon 698,* Waseca; *Sheldon 1007,* Sleepy Eye; *Herrick 316,* Minneapolis; *Holzinger 292,* Winona Co.; *Sandberg 589,* Vasa.

LILIUM LINN. Gen. 258 (1737).

Martagon SALISB. Gen. Pl. Fragm. 56 (1822?).
Notholirion BOISS. Fl. Or. V, 190 (1867).

Benth. and Hook., *Gen. Pl.* III, 816; Durand, *Ind. Gen. Phan.* 430; Engler and Prantl, *Nat. Pflanz.* 2, V, 60 (Engler).

Living species: 45; temperate regions, N. hemisphere. Russia, 10; Europe, 7; N. America, 14; Atl. region, 5; Pac. region, 9; Rocky mts., 1; S. Sts., 5–6; Canada, 4. E. Asia, 25±.

Lilium canadense LINN. Spec. 303 (1753).

L. pardalinum var. *bourgœi* BAKER, Linn. Journ. XIV, 242 (1875).

Wats. and Coult., Gray's Man. 6 ed. 529; Britt., Fl. N. J. 242; Upham, Fl. Minn. 146; Webb., Fl. Neb. 108; Mac., Fl. Can. II, 38; Chap., Fl. S. St. 484; Engl., Nat. Pflanz. II, 5, 61; Wats., King Exp. 346.

North America: N. S., N. Br., Q., Ont. to Ft. Francis on Rainy Lake river; S. to N. Eng., N. J., Ga.; W. to Minn., Neb., Mo.

Minn. valley: Throughout; principally forest district; moist fields, bogs and marshy meadows.

HERB.: *Ballard 410,* New Prague, Scott Co.; *Taylor 261,* Janesville; *Taylor 718,* Minnesota lake; *Sheldon 401,* Madiison Lake, Blue Earth Co.; *Oestlund 202,* Ramsey Co.; *Kassube 248,* Minneapolis; *Herrick 315,* Minneapolis; *Sandberg 587,* Cannon Falls; *Sheldon 450,* Duck lake, Blue Earth Co.

Lilium superbum LINN. Spec. ed. 2, 435 (1762).

L. carolinianum MICHX. Fl. I, 197 (1803).
L. canadense var. *superbum* ELWES, Mon. Lil. 21 (1878).

Wats. and Coult., Gray's Man. 6 ed. 529; Britt., Fl. N. J. 242; Chap., Fl. S. St. 484; Upham, Fl. Minn. 146; Engl., Nat. Pflanz. II, 5, 61; Cov., Fl. Ark. 225; Mac., Fl. Can. II, 39.

North America: W. Ont. and N. Eng. to N. J. and Ga.; W. to Minn., Mo. and Ark.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; low grounds and meadows.

HERB.: *Holzinger 288,* Winona.

Lilium philadelphicum LINN. Spec. ed. 2, 435 (1762).

L. umbellatum PURSH, Fl. Am. 229 (1814).

Wats. and Coult., Gray's Man. 6 ed. 529; Britt., Fl. N. J. 242; Upham, Fl. Minn. 146; Mac., Fl. Can. II, 38; Chap., Fl. S. St. 484; Coult., Fl. Colo. 351; Engl., Nat. Pflanz. II, 5, 61; Roth., Wheel. Exp. 269; Cov., Fl. Ark. 225.

North America: Ont. to L. Huron, Saskatchewan, prairie region and Rockies and Columbia valley, Brit. Col.; S. to Colo. in Rocky mts.; E. to Minn., Ark., N. Eng., N. J. and N. Car.

Minn. valley: Throughout; common; fields, prairies; forest openings and hillsides; principally forest district.

HERB.: *Taylor 554*, Minnesota lake; *Sheldon 640*, Waseca; *Sheldon 697*, Waseca; *Ballard 263*, Jordan, Scott Co.; *Ballard 460*, Prior's lake, Scott Co.; *Sandberg 585*, Chisago Co.; *Kassube 247*, Minneapolis; *Roberts 134*, Split Rock; *Leonard 47*, Spring Valley; *Bailey 386*, Mud lake; *Sandberg 586*, Cannon Falls; *Herb. Sheld. 1695*, Minneapolis; *Herb. Wickersheim 127*, Idlewild, Lincoln Co.; *Herb. Moyer 241*, Minnesota valley.

ERYTHRONIUM LINN. Gen. 262 (1737).

Benth. and Hook., *Gen. Pl.* III. 819; Durand, *Ind Gen. Phan.* 430; Engler and Prantl, *Nat. Pflanz.* 2, V, 63 (Engler).

Living species: 7; 1, Europe, Russian Asia and Japan; 6, N. America; Canada, 4–5; S. Sts., 2; California, 3–4 (1 endem.); Rocky mts., 1.

Erythronium albidum NUTT. Gen. I, 223 (1818).

Wats. and Coult., Gray's Man. 6 ed. 528; Britt., Fl. N. J. 243; Mac., Fl. Can. II, 41; Upham, Fl. Minn. 146; Webb., Fl. Neb. 107; Cov. Fl. Ark. 225.

North America: Ont. to N. Y., N. J.; W. to Minn., Neb. and Kan.

Minn. valley: Throughout; infrequent; low woods, shaded banks and hillsides.

HERB.: *Sandberg 588*, Vasa; *Manning 9*, Lake City; *Holzinger 290*, Winona Co.; *Herb. Wickersheim 128*, Lake Benton; *129*, Mankato.

Erythronium americanum SM.

E. dens-canis var. *g.* LINN. Spec. ed. 2, 437 (1762).

E. lanceolatum PURSH, Fl. Am. I, 230 (1814).

Wats. and Coult., Gray's Man. 6 ed. 528; Britt., Fl. N. J. 242; Mac., Fl. Can. II, 41; Upham, Fl. Minn. 146; Chap., Fl. S. St. 484; Engl., Nat. Pflanz. II, 5, 63; Cov., Fl. Ark. 225.

North America: N. S., Q., Ont. to Owen Sound and Georgian Bay; S. to N. Eng., N. J. and Fla.; W. to Minn., Mo. and Ark.

Minn. valley: Forest district; St. Paul to Blue Earth Co.; thickets, copses and rich woodland.

HERB.: *Holzinger 289*, Winona Co.; *Holzinger 291*, Winona.

CAMASSIA LINDL. Bot. Reg. t. 1486 (——).

Cyanotris RAF. Am. Mo. Mag. (1819).

Sitocodium SALISB. Gen. Pl. Fragm. 27 (1822?).

Benth. and Hook., *Gen. Pl.* III, 815; Durand, *Ind. Gen. Phan.* 429; Engler and Prantl, *Nat. Pflanz.* 2, V, 66 (Engler).

Living species: 3; N. America; Canada, 3; Calif., 1; E. Sts., 1; S. Sts., 1; Pl. Wheel., 1; Pl. King, 1.

Camassia fraseri (NUTT.) TORR. Pac. Rep. IV, 147 (1856).

Phalangium esculentum NUTT. Fras. Cat. (1813).

P. fraseri NUTT.?

Scilla esculenta KER Bot. Reg. t. 1574 (1833).

S. fraseri GRAY. Man. ed. 5, 553 (1868).

Wats. and Coult., Gray's Man. 6 ed. 523; Mac., Fl. Can. II, 37; Upham, Fl. Minn. 147; Engl., Nat. Pflanz. 2, V, 66; Cov., Fl., Ark. 225.

North America: Ont. and W. Penn. to Ga.; W. to Minn., Kan. and Ark.

Minn. valley: Reported from S. central district; local and rare; wet prairies, bases of hills and banks of streams.

CLINTONIA RAF. Journ. Phys. LXXXIX, 102 (1819).

Xeniatrum SALISB. Gen. Pl. Fragm. 58 (1822?).

Benth. and Hook., *Gen. Pl* III, 832; Durand, *Ind. Gen. Phan.* 432; Engler and Prantl, *Nat. Pflanz.* 2, V, 79 (Engler).

Living species: 6; Pac. America, 2; Atl. Amer., 2; Japan and E. Siberia, 1; C. and E. Himalayas, 1.

Clintonia borealis (AIT.) RAF. Atl. Journ. 120 (1832).

Dracaena borealis AIT. Hort. Kew. I, 5 (1789).

Smilacina borealis PURSH, Fl. Am. 232 (1814).

Convallaria umbellata TORR. Fl. N. Am. I, 355 (1824).

Wats. and Coult., Gray's Man. 6 ed. 527; Britt., Fl. N. J. 244; Upham, Fl. Minn. 145; Mac., Fl. Can. II, 47; Chap., Fl. S. St. 482; Engl., Nat. Pflanz. II, 5, 27.

North America: Labrador, Newf., N. S., N. Br., Q., Ont. to L. Winnipeg and the Saskatchewan; S. to N. J. and N. Car.; W. to Minn. and Oregon?.

Minn. valley: N. E. and N. W. districts; infrequent; cold woods and tamarack swamps.

HERB.: *Lugger 1*, Vermilion lake; *Roberts 132*, North shore; *Herrick 309*, St. Louis river; *Arthur 46*, Vermilion lake; *Bailey 120*, Vermilion lake; *Sandberg 578*, Agate bay.

UNIFOLIUM ADANS. Fam. II (1763).

Tovaria NECK. Elem. III, 190 (1790) *not Adans.*
Smilacina DESF. Ann. Mus. Par. IX, 51 (1798).
Sigillaria RAF. Jour. Phys. LXXXIX, 261 (1819).
Polygonastrum MOENCH, Meth. 637 (1794).
Asteranthemum, Jocaste, Medora KUNTH, Enum. V, 148–155 (1850).
Neolexis SALISB. Gen. Pl. Fragm. 64 (1822?).
Majanthemum WIGG. Prim. Holst. 15 (1780).
Sciophylla WIBEL, Prim. Werth. 147 (1799).
Bifolium GAERTN. Wett. Fl. I, 209 (1799).
Styrandra RAF. Jour. Phys. LXXXIX, 102 (1819).
Maia SALISB. Gen. Pl. Fragm. 64 (1822?).

Benth. and Hook., *Gen. Pl.* III, 770; Durand, *Ind. Gen. Phan.* 422; Engler and Prantl, *Nat. Pflanz.* 2, V, 79 (Engler); O. Kuntze, *Rev. Gen.* II, 717, 718; Schenck, *Palaeophyt.* 361.

Living species: 21; N. temperate regions, 2; Himalayas, 5; E. Siberia, 1; Japan, 1; W. N. America, 1 (end.); Mexico and Gautemala, 7; Canada, 6; California, 4; Rocky mts., 3; E. Sts., 4; N. America, 8–10; Europe, 1.

Fossil species: ? Cretaceous, Greenland (*Heer*); Tertiary, Greenland (*Heer*).

Unifolium bifolium (LINN.)

Convallaria bifolia LINN. Spec. 316 (1753).
C. quadrifida LAM. Fl. Fr. III, 269 (1778).
Majanthemum convallaria WIGG. Prim. Fl. Holst. 15 (1780).
Evallaria bifolia NECK. Elem. III, 196 (1791).
Convallaria tetrapetala GILIB. Exerc. Phyt. II, 461 (1792).
Majanthemum cordifolium MOENCH, Meth. 638 (1794).
Smilacina bifolia DESF. Ann. Mus. IX, 54 (1807).
Majanthemum canadense DESF. Ann. Mus. IX, 52 (1807).
Smilacina canadense PURSH, Fl. Am. 233 (1814).
Styrandra bifolia RAF. Jour. Phys. LXXXIX, 102 (1819).
Smilacina bifolia var. *canadense* GRAY, Man. ed. 5, 530? (1868).
Unifolium canadense GREENE, Torr. Bull. XV, 287 (1888).

Wats. and Coult., Gray's Man. 6 ed. 526; Britt., Fl. N. J. 241: Mac., Fl. Can. II, 32; Upham, Fl. Minn. 145; Chap., Fl. S. St. 481; Wats., Fl. Calif. II, 162; Richt., Pl. Eur. 231; Engl., Nat. Pflanz. II, 5, 80; Rothr., Alask. 456.

Whole N. temperate zone.

North America: Labrador and Newf. to Hudson Bay, Bear lake and Rockies; S. through Can. to N. Eng., N. J. and N. Car. W. to Minn., Dak. and Iowa. Alaska.

Minn. valley: Throughout; principally in forest district and along streams; damp woods and banks; tamarack swamps.

HERB.: *Ballard 870*, Waconia; *Ballard 418*, New Prague, Scott Co.; *Ballard 68*, Chaska; *Taylor 948*, Glenwood;

Holzinger, 285, Winona Co.; *Sandberg 582*, Tower; *Oestlund 200*, Ramsey Co.; *Herrick 312*, Minneapolis; *Bailey 246*, Vermilion lake; *Kassube 245*, Minneapolis; *Hammond 46*, Lake City; *Herb. Sheld. 1730*, Minneapolis; *1710*, Ramsey Co.

Unifolium trifolium (LINN.) GREENE, Torr. Bull. XV, 287 (1888).

Convallaria trifolia LINN. Spec. 316 (1753).
Smilacina trifolia DESF. Ann. Mus. IX, 52 (1807).
Majanthemum trifolium LINK, Enum. I, 343 (1821).

Wats. and Coult., Gray's Man. 6 ed. 526; Britt., Fl. N. J. 241; Mac, Fl. Can. II, 32; Upham, Fl. Minn. 145; Engl., Nat. Pflanz. II, 5, 79.

E. Siberia.

North America: Labrador, Newf. to Man., Bear lake and Rocky mts.; S. to N. Eng., N. J. and Penn.; W. to Mich., Minn.

Minn. valley: Forest district and N. W. district; bogs and damp woods or darkly shaded banks.

HERB.: *Sheldon 218*, Lake Washington, Blue Earth Co.; *Roberts 133*, North shore; *Herrick 311*, St. Louis river; *Juni 16*, Put-in-Bay; *Bailey 289*, Vermilion lake; *Sandberg 581*, Chisago lake; *Herb. Sheld. 1786*, Minneapolis; *Hammond 47*, Lake City.

Unifolium stellatum (LINN.) GREENE, Torr. Bull. XV, 287 (1888).

Convallaria stellata LINN. Spec. 316 (1753).
Smilacina stellata DESF. Ann. Mus. IX, 52 (1807).
Majanthemum stellatum LINK, Enum. I, 343 (1821).
Asteranthemum vulgare KUNTH, Enum. V, 152 (1850).

Wats. and Coult., Gray's Man. 6 ed. 526; Britt., Fl. N. J. 241; Webb, Fl. Neb. 108; Upham, Fl. Minn. 145; Mac., Fl. Can. II, 30; Coult., Fl. Colo. 350; Wats., Fl. Calif. II, 161; Richt., Pl. Eur. 231; Engl., Nat. Pflanz. II, 5, 79; Roth., Wheel. Exp. 270; Wats., King Exp. 345; Cov., Fl. Ark. 224; Hart., Fl. Scand. I, 569.

Introduced in Norway.

North America: Labrador to Hudson Bay, Saskatchewan, Assiniboia, Rocky mts. and Oregon; S. in Sierras to Carson, Nev.; in Rockies to N. Mex.; E. through Ark. and Neb. to Tenn., N. J. and Atl. coast.

Minn. valley: Throughout; frequent; banks, woods and moist copses.

HERB.: *Sheldon 230*, Lake Washington, Blue Earth Co.; *Sheldon 135*, Madison Lake; *Sheldon 882*, Sleepy Eye; *Sheldon 12a*, Elysian; *Ballard 417*, New Prague, Scott Co.; *Taylor 166*, Janesville; *Taylor 212*, Janesville; *Sandberg 580*, Goodhue Co.; *Herrick 310*, Minneapolis; *Holzinger 284*, Winona Co.; *Kassube*

244, Minneapolis; *Hammond 44*, Lake City; *Herb. Sheld. 1895*, Hennepin Co.; *Herb. Wickersheim 125*, Idlewild, Lincoln Co.; *Herb. Moyer 239*, Chippewa valley.

Unifolium racemosum (LINN.) BRITT. Torr. Bull. (1888).

Convallaria racemosa LINN. Spec. 315 (1753).
Smilacina racemosa DESF. Ann. Mus. IX, 52 (1807).
Smilacina ciliata PURSH, Fl. Am. 232 (1814).
Majanthemum racemosum LINK, Enum. I, 343 (1821).

Wats. and Coult., Gray's Man. 6 ed. 525; Britt., Fl. N. J. 240; Mac., Fl. Can. II, 31; Upham, Fl. Minn. 145; Chap., Fl. S. St. 481; Engl., Nat. Pflanz. II, 5, 79; Wats., King Exp. 345; Cov., Fl. Ark. 224.

North America: N. S., N. Br., Q., Ont. to Man. and Saskatchewan; S. to N. Eng., N. J. and S. Car.; W. to Minn., E. Kan. and Ark. S. to northern Mexico?

Minn. valley: Forest district, and probably throughout; moist woods and banks of streams and lakes.

HERB.: *Sheldon 904*, Sleepy Eye; *Ballard 77*, Chaska; *Sheldon 136*, Madison Lake, Blue Earth Co.; *Taylor 12*, Elysian; *Taylor 135*, Janesville; *Holzinger 283*, Winona Co.; *Kassube 243*, Minneapolis; *Sandberg 579*, Cannon Falls; *Hammond 48*, Lake City; *Herb. Sheld. 1892*, Minneapolis; *Herb. Wickersheim 124*, Mankato.

POLYGONATUM ADANS. Fam. II, 54 (1763).

Evallaria NECK. Elem. III, 189 (1790).
Axillaria RAF. Jour. Phys. LXXXIX, 261 (1819).
Campydorum SALISB. Gen. Pl. Fragm. 64 (1822?).
Periballanthus FRANCH. ET SAV. ex Dur. l. c. (1888).

Benth. and Hook., *Gen. Pl.* III, 768; Durand, *Ind. Gen. Phan.* 421; Engler and Prantl, *Nat. Pflanz.* 2, V, 80 (Engler); Schenck, *Palaeophyt.* 362.

Living species: 23; temperate N. hemisphere. Europe, 6; Russia, 7; Russian Europe, 4; N. America, 2–3; E. Sts., 2; Canada, 2; S. Sts., 2; Rocky mts., 1.

Polygonatum commutatum (SCHULT.) DIETR. Ott. Gartenz. 222 (1835).

Convallaria canaliculata WILLD. Spec. IV (1805).
? Polygonatum canaliculatum PURSH, Fl. Am. 235 (1814).
Convallaria commutata SCHULT. Syst. VII, 1671 (1830).
P. giganteum DIETR. Ott. Gartenz. 322 (1835).

Wats. and Coult., Gray's Man. 6 ed. 525; Britt., Fl. N. J. 240; Upham, Fl. Minn. 146; Webb., Fl. Neb. 108; Mac., Fl. Can. II. 28; Coult., Fl. Colo. 350; Wats., King Exp. 346; Cov., Fl. Ark. 224.

North America: W. Ont. to Saskatchewan; S. to N. Eng., N. J. and Va.; W. to Mont., Ark. and N. Mex.

Minn. valley: Throughout; common; woods and shady banks of lakes and streams.

HERB.: *Taylor 118a*, Janesville; *Ballard 67*, Chaska; *Sheldon 41*, Elysian; *Taylor 34*, Elysian; *Oestlund 201*, Hennepin Co.; *Holzinger 287*, Winona Co.; *Herrick 314*, Minneapolis; *Sandberg 584*, Cannon Falls; *Hammond 45*, Lake City; *Herb. Wickersheim 126*, Lake Benton.

Polygonatum biflorum (WALT.) ELL Sk. (1823).

Convallaria biflora WALT. Fl. Car. 122 (1788).

C. multiflora MICHX. Fl. I, 202 (1803).

Polygonatum angustifolium, ? canaliculatum, pubescens, ? hirtum, latifolium and *multiflorum* PURSH, Fl. I, 234–235 (1814).

Convallaria parviflora POIR. Suppl. Enc. Meth. IV, 29 (1816).

Wats. and Coult., Gray's Man. 6 ed. 525; Britt., Fl. N. J. 240; Mac., Fl. Can. II, 28; Chap., Fl. S. St. 481; Upham, Fl. Minn. 146; Engl., Nat. Pflanz. II, 5, 81; Cov., Fl. Ark. 224; Webb., Appx. Neb. 26.

North America: N. S., N. Br., Q., Ont. to Owen Sound, Georgian Bay and S. Man.; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., E. Kan., Ark. and Tex.

Minn. valley: Throughout; frequent; woods and shady banks of lakes and streams.

HERB.: *Taylor 262*, Janesville; *Sheldon 116*, Madison Lake, Blue Earth Co.; *Ballard 69*, Chaska; *Holzinger 286*, Winona Co.; *Herrick 313*, Minneapolis; *Kassube 246*, Minneapolis; *Sandberg 583*, Cannon Falls; *Hammond, 43*, Lake City; *Herb. Moyer 240*, Carlton lake, near Montevideo.

MEDEOLA LINN. Gen. 305 (1737).

Gyromia NUTT Gen. I, 238 (1818).

Benth. and Hook., *Gen. Pl.* III, 833; Durand, *Ind. Gen. Phan.* 432; Engler and Prantl, *Nat. Pflanz.* 2, V, 83 (Engler).

Living species: 1; Atlantic N. America.

Medeola virginiana LINN. Spec. 339 (1753).

M. virginica LINN. Spec. ed 2 (1762).

Gyromia virginica NUTT. Gen. I, 238 (1818).

Wats. and Coult., Gray's Man. 6 ed. 530; Britt., Fl. N. J. 244; Upham, Fl. Minn. 144; Mac., Fl. Can. II, 48; Chap., Fl. S. St. 479: Engl., Nat. Pflanz II, 5, 83; Cov., Fl. Ark. 225.

North America: N. S., N. Br., Q., Ont. to Owen Sound and Georgian Bay; S. to N. Eng., N. J., Mid. Fla.; W. to Minn., Ind. and Ark.

Minn valley: Reported from N. E. district; rare; rich woodland and banks of streams.

TRILLIUM LINN. Gen. ed. V, 412 (1754).

Delostylis RAF. Journ. Phys. LXXXIX, 102 (1819).
Trillidium KUNTH, Enum. V, 120 (1850).
Esdra SALISB. Gen. Pl. Fragm. 60 (1822?).

Benth. and Hook., *Gen. Pl.* III, 833; Durand, *Ind. Gen. Phan.* 432; Engler and Prantl, *Nat. Pflanz.* 2, V, 84 (Engler).

Living species: 15; N. America and from Japan to the Himalayas. N. America, 14; Canada, 5–6; S. Sts., 8–10; E. Sts., 7; California, 4–5.

Trillium nivale RIDD. Syn. W. Fl. 93 (1835).

Wats. and Coult., Gray's Man. 6 ed. 531; Upham, Fl. Minn. 144.

North America: W. Penn. to Ky., Ohio, Iowa and Minnesota.

Minn. valley: S. central district; local and rare; rich woods and shaded banks.

HERB.: *Leiberg 73*, Blue Earth Co.

Trillium cernuum LINN. Spec. 339 (1753).

T. pendulum MUHL. Willd. Hort. Berol. I, 35 (1816).

Wats. and Coult., Gray's Man. 6 ed. 531; Britt., Fl. N. J. 245; Upham, Fl. Minn. 144; Mac , Fl. Can. II, 50; Chap., Fl. S. St. 478.

North America: Newf., N. S., Q., Ont., Georgian Bay; S. to N. Eng., N. J., Ga.; W. to Minn. and Mo.

Minn. valley: Throughout; frequent; woods and along streams.

HERB.: *Sheldon 202*, Lake Washington, Blue Earth Co.; *Taylor 918*, Glenwood; *Kassube 239*, Minneapolis; *Sandberg 570*, Taylor's Falls; *Leonard 46*, Bloomington; *Herb. Wickersheim 122*, Lake Benton; *Herb. Moyer 236*, Montevideo.

Trillium grandiflorum (MICHX.) SALISB. Parad. Lond. I, (1806).

T. rhomboideus var. *grandiflorum* MICHX. Fl. N. Am. I, 216 (1803).
T. camtschaticum PURSH. Fl. Am. I, 246 (1814).

Wats. and Coult., Gray's Man. 6 ed. 530; Upham, Fl. Minn. 144; Mac., Fl. Can. II, 50; Chap., Fl. S. St. 478; Engl., Nat. Pflanz. II, 5, 84.

Ont. to Owen Sound; E. to Vt.; S. to N. Car.; W. to Minn. and Mo.

Minn valley: Forest district and probably N. W.; rich woodland and shaded river banks.

HERB.: *Hammond 3*, Lake City; *Holzinger 281*, Winona; *Sandberg 569*, Vasa.

Trillium erectum LINN. Spec. 340 (1753).

T. album PURSH, Fl. Am. I, 245 (1814).
T. pendulum AIT. Hort. Kew. ed. 2, II, 328 (1811).
T. erectum var. *declinatum* GRAY, Man. ed. 5, 523 (1868).

Wats. and Coult., Gray's Man. 6 ed. 530; Britt., Fl. N. J. 245; Upham, Fl. Minn. 144; Chap., Fl. S. St. 478; Mac., Fl. Can. II, 48; Engl., Nat. Pflanz. II, 5, 84.

North America: N. S., Q., Ont., Man.; S. to N. J. and N. Car.; W. to Minn. and Mo.

Minn. valley: Forest district; rich woodland and shaded riverbanks.

HERB.: *Taylor 120*, Janesville; *Ballard 202*, Jordan, Scott Co.; *Sandberg 566*, Chisago lake; var. *album* (Pursh) =*Sandberg 567*, Red Wing; *Sandbery 568*, Red Wing; var. *declinatum Gray*=*Holzinger 280*, Winona; *Herrick 302*, Minneapolis; *Arthur 103*, Vermilion lake; *Herrick 303*, St. Louis river; *Bailey 231*, Vermilion lake.

Trillium recurvatum BECK, Bot. (1833).

Wats. and Coult., Gray's Man. 6 ed. 530; Upham, Fl. Minn. 144.

North America: Ohio and Ind. to Ill. Minn., Mo. and Ark.

Minn. valley: Reported from Rice Co.; doubtful or rare.

Trillium sessile LINN. Spec. (1753).

Wats. and Coult., Gray's Man. 6 ed. 530; Upham, Fl. Minn 144; Chap., Fl. S. St. 477; Cov., Fl. Ark. 225.

North America: Penn. to Fla.; W. to Minn. and Ark.

Minn. valley: Reported from N. E. district; rare or doubtful; damp woods and shaded banks.

SMILAX LINN. Gen. 751 (1737).

Nemexia RAF. Med. Fl. II, 264 (1830).
Coprosmanthus KUNTH, Enum. V, 263 (1850).
Parillax RAF. Med. Fl. l. c. (1830).
Pleiosmilax SEEM. Jour. Bot. 193 (1868).

Benth. and Hook., *Gen. Pl.* III. 763; Durand, *Ind. Gen. Phan.* 420; Engler and Prantl, *Nat. Pflanz.* 2, V, 88 (Engler); Schenck, *Palaeophyt.* 362, 363.

Living species: 200±; especially in the tropics, but extending to temperate N. America, E. Asia and the Mediterranean region. Europe, 3; Russia, 2; N. America, 14; E. Sts., 12; California, 1; Canada, 3; S. Sts., 10; Rocky mts., 1.

Fossil species: A large number described, but many doubtful. Tertiary—Eocene and Miocene. Greenland (*Heer*); S. France (*Saporta*); W. America (*Lesquereaux*); Baltic region, amber (*Conwentz*).

Smilax hispida MUHL. Cat. 97 (1813).

? *S. rotundifolia* WILLD. Spec. IV, 779 (1805).
S. grandifolia BUCKL. in Herb. Boiss.

Wats. and Coult., Gray's Man. 6 ed. 521; Britt., Fl. N. J. 239; Webb., Fl. Neb. 108; Mac., Fl. Can. II, 27; Upham, Fl. Minn. 143.

North America: Ont. to Conn., N. J. and Va.; W. to Minn., Neb. and Tex.

Minn. valley: Forest district; thickets and edges of woods; rather rare.

HERB.: *Sandberg 564*, Cannon Falls.

Smilax rotundifolia LINN. Spec. 1460 (1753).

S. caduca LINN. Herb. Kalm.
S. quadrangularis MUHL. Willd. Spec. IV, 775 (1805).
S. ciliata STEUD. Hort. Frank.
S. aspera DC. Organ. II, 262 (1827).

Wats. and Coult., Gray's Man. 6 ed. 520; Britt., Fl. N. J. 239; Chap., Fl. S. St. 477; Upham, Fl. Minn. 143; Mac., Fl. Can. II, 26; Coult., Fl. Colo. 355; Engl., Nat. Pflanz. II, 5, 89; Cov. Fl. Ark. 224.

Central America; W. Indies.

North America: Ont. to N. Eng., N. J. and Ga.; W. to Minn., Colo., Mo., Ark. and Tex.

Minn. valley: Forest district and probably throughout; woods along streams.

HERB.: *Ballard 87n*, Chaska; *Sheldon 39*, Elysian; *Taylor 200*, Janesville; *Taylor 487*, Janesville; *Taylor 45*, Elysian; *Taylor 664*, Cobb river, Blue Earth Co.; *Sandberg 563*, Cannon Falls.

Smilax echirrata WATS. Gray's Man. ed. 6, 520 (1890).

Wats. and Coult., Gray's Man. 6 ed. 520.

North America: Md. to S. Car.; W. to Mich., Minn., Mo. and Ark.

Minn. valley: S. E. district: moist, wooded banks and damp thickets,

HERB.: *Taylor 709*, Minnesota lake.

Smilax herbacea LINN. Spec. 1030 (1753).

? *S. pulverulenta* MICHX. Fl. II, 238 (1803).
? *S. peduncularis* MUHL. Willd. Spec. IV, 786 (1805).
Coprosmanthus herbaceus KUNTH, Enum. V, 264 (1850).
Smilax herbacea var. *pulverulenta* GRAY, Man. 5 ed. (1868).

Wats. and Coult., Gray's Man. 6 ed. 520; Britt., Fl. N. J. 239; Webb., Fl. Neb. 108; Upham, Fl. Minn. 143; Mac., Fl. Can. II, 27; Engl., Nat. Pflanz. II, 5, 88; Cov. Fl. Ark. 224; Webb., Appx. Neb. 26.

Japan.

North America: N. Br. to Winnipeg, Red, Saskatchewan and Assiniboine valleys; S. to N. Eng., N. J., Fla.; W. to Minn., Neb., Mo. and Tex.

Minn. valley: Throughout; abundant; meadows and river banks.

HERB.: *Taylor 945,* Glenwood; *Sheldon 311,* Madison Lake, Blue Earth Co.; *Taylor 819,* Glenwood; *Taylor 199,* Janesville; *Taylor 710,* Minnesota lake; *Taylor 30,* Elysian; *Sheldon 700,* Waseca; *Kassube 238,* Minneapolis; *Juni 15,* Minneapolis; *Sandberg 565,* Red Wing; and in var. *puverulenta* (Michx.); *Sheldon 212½,* Lake Washington, Blue Earth Co.; *Sheldon 382,* Madison Lake, Blue Earth Co.; *Herb. Sheld. 1891,* Minneapolis; *Herb. Wickersheim 120.* Mankato; *Herb. Wickersheim 121,* Idlewild, Lincoln Co.; *Herb. Moyer 235,* var. *puverulenta* (Michx.), Montevideo.

XVIII. AMARYLLIDACEAE. Amaryllis Family.

Endlicher, *Gen. Pl.* 147 (1840); Benth. and Hook., *Gen. Pl.* III, 711 (1883); Pax, *in Engler and Prantl, Nat. Pflanz.* 2, V, 97 (1887).

Genera: 70; temperate and warmer regions.

Species: 700; principally subtropical.

HYPOXIS LINN. Gen. ed. VI, 417 (1764)

Janthe, Spiloxene SALISB. Gen. Pl. Fragm. 44 (1822?).

Niobea WILLD. Rel. Schult. Syst. VII, 762 (1830).

Benth. and Hook., *Gen. Pl.* III, 717; Durand, *Ind. Gen. Phan.* 415; Engler and Prantl, *Nat. Pflanz.* 2, V, 121 (Pax).

Living species: 50; tropical regions; Australia; N. America; S. Africa and Mascerene Isls. N. America, 2; Rocky mts., 1; E. Sts., 2; S. Sts., 2.

Hypoxis erecta LINN. Spec. ed. 2, 439 (1762).

H. carolinensis MICHX. Fl. N. Am. I, 188 (1803).

Wats. and Coult., Gray's Man. 6 ed. 517; Britt., Fl. N. J. 238; Upham, Fl. Minn. 142; Mac., Fl. Can. II. 26; Webb., Fl. Neb. 108; Chap., Fl. S. St. 468; Cov. Fl. Ark. 223.

North America: Prairie region of Can. from Assiniboia to Ont.; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., E. Kan. and Tex.

Minn. valley: Throughout; meadows and hillsides.

HERB.: *Taylor 347,* Janesville; *Ballard 277,* Jordan, Scott Co.; *Herrick 300,* Minneapolis; *Kassube 235,* Minneapolis; *Sandberg 560,* Cannon Falls; *Hammond 40,* Lake City; *Herb. Sheld. 1841,* Minneapolis; *Herb. Wickersheim 119,* Idlewild, Lincoln Co.; *Herb. Moyer 232,* Black Oak lake, Chippewa Co.

XIX. DIOSCOREACEAE. Yam Family.

Endlicher, *Gen. Pl.* 157 (1840); Benth. and Hook., *Gen. Pl.* III, 741 (1883); Pax, *in Engler and Prantl, Nat. Pflanz.* 2, V, 131 (1887).

Genera: 9 living; 2 extinct. Warmer regions.

Species: 175±; 5-6 extinct.

DIOSCOREA LINN. Gen. 754 (1737).

Borderea MIEGEV. Bull. Soc. Fr. XIII, 374 (1867).
Epipetrum PHILIPPI, Linn. XXXIII, 253 (1859).
Helmia KUNTH, Enum. V, 414 (1850).
Hamatris SALISB. Gen. Pl. Fragm. 11 (1822?).
Botryosychios HOCHST. Flora (1844).
Merione and **Polynome** SALISB. l. c. (1822?).
Sismondea DELPON. Mem. Tur. 2, XIV, 394 (1854).
Strophis and **Elephantodon** SALISB. l. c. 12 (1822?).

Benth. and Hook., *Gen. Pl.* III, 743; Durand, *Ind. Gen. Phan.* 420; Engler and Prantl, *Nat. Pflanz.* 2, V, 132 (Pax); Schenck, *Palaeophyt.* 365.

Living species: 150; warmer regions of the earth. Principally N. and S. America and S. Africa. U. S., 1.

Fossil species. Cretaceous, Kansas *(Lesquereaux)*, a doubtful species. Tertiary, S. France, Bonn, 1–2 (*Saporta, Weber*).

Dioscorea villosa LINN. Spec. 1033 (1753).

D. quinata WALT. Fl. Car. 246 (1788).
D. paniculata MICHX. Fl. N. Am. II, 239 (1803).

Wats. and Coult., Gray's Man. 517; Britt., Fl. N. J. 238; Upham, Fl. Minn. 143; Chap., Fl. S. St. 474; Mac., Fl. Can. II, 26; Engl. Pax, Nat. Pflanz. II, 5, 134; Cov., Fl. Ark. 224.

North America: Ont. to N. Eng., N. J. and Fla.; W. to Minn., Kan., Ark. and Tex

Minn. valley: Forest district; Ft. Snelling to Mankato; infrequent; thickets and edges of woods.

XX. IRIDACEAE. Iris Family.

Endlicher, *Gen. Pl.* 164 (1840); Benth. and Hook., *Gen. Pl.* III, 681 (1883); Pax *in Engler and Prantl, Nat. Pflanz.* 2, V, 137 (1887).

Genera: 57 living; 1 fossil.

Species: 800; Mediterranean and African region, and all warmer and temperate regions. Center in Cape of Goodhope region for Old World, and in Central America for New World.

IRIS LINN. Gen. 29 (1737).

Neubeckia ALEF. Bot. Zeit. 290, 297 (1863).
Chamoletta ADANS. Fam. II, 60 (1763).
Xyridion and **Ioniris** KLATT. Bot. Zeit. 497, 513 (1872).
Onocyclus SIEMSS. Bot. Zeit. 706 (1846).
Evansia, Diaphane, Thelysia SALISB. Trans. Hort. Soc. I, 303–305 (1812).
Costia WILLK. Bot. Zeit. 131 (1860).
Coresanthe ALEF. Bot. Zeit. 298 (1863).
Hermodactylon, Xiphion, Gynandriris PARLAT. N. Gen. et Spec. Monoc. 34 (1839?).

Juno TRATT. R. and S. Syst. I, 471, 474 (1817).

Benth. and Hook., *Gen. Pl.* III, 686; Durand, *Ind. Gen. Phan.* 412; Engler and Prantl, *Nat. Pflanz.* 2, V, 145 (Pax); Schenck, *Palaeophyt.* 364.

Living species: 100; temperate and warmer N. hemisphere; Russia, 38; Europe, 41; Russian Europe, 14; N. America, 20; California, 6; S. Sts., 7; Rocky mts., 2; E. Sts., 6; Canada, 6–7; Pl. King, 1; Pl. Wheel., 1.

Fossil species: Tertiary, Oeningen (*Heer*); Greenland, Spitzbergen, Grinnell-Land—*Iridium* (*Heer*).

Iris versicolor LINN. Spec. 39 (1753).

? *I. hexagona* WALT. Fl. Car. 66 (1788).

I. virginica PURSH, Fl. Am. 29 (1814).

Wats. and Coult., Gray's Man. 6 ed. 513; Britt., Fl. N. J. 237; Mac., Fl. Can. II, 23; Upham, Fl. Minn. 143; Chap., Fl. S. St. 472; Cov., Fl. Ark. 223; Webb., Appx. Neb. 26.

North America: Newf., N. S., Q., Ont. to Man.; S. to N. J., Fla.; W. to Minn., Neb. and Ark.

Minn. valley: Throughout; abundant; marshes and swamps; wet meadows and edges of streams.

HERB.: *Ballard 57*, Chaska; *Sheldon 367*, Madison Lake, Blue Earth Co.; *Taylor 299*, Janesville; *Sheldon 12*, Elysian; *Kassube 236*, Minneapolis; *Oestlund 197*, Hennepin Co.; *Holzinger 279*, Winona Co.; *Bailey 220*, Vermilion lake; *Sandberg 561*, Goodhue Co.; *Hammond 41*, Lake City; *Herb. Moyer 233*, Montevideo.

SISYRINCHIUM LINN. Gen. 689 (1737).

Souza VELLOZ. Fl. Flum. 273 (1827).

Syorhynchium HOFFM. ex Durand, l. c. (1888).

Bermudiana ADANS. Fam. II, 60 (1763).

Echthronema, Glumosia, Eriphilema HERB. Bot. Reg.

Hydastylus SALISB. Trans. Hort. Soc. I, 310 (1812).

Benth. and Hook., *Gen. Pl.* III, 698; Durand, *Ind. Gen. Phan.* 413; Engler and Prantl, *Nat. Pflanz.* 2, V, 150 (Pax).

Living species: 50; America, especially tropics; extending to Canada and Magellan. N. America, 6-8; California, 3-4; Canada, 4; E. Sts., 3; S. Sts., 2-3.

Sisyrinchium mucronatum MICHX. Fl. N. Am. II, 33 (1803).

S. angustifolium AUCT. (*in part.*)

Wats. and Coult., Gray's Man. 6 ed. 515; Britt., Fl. N. J. 238; Webb., Fl. Neb. 108; Chap., Fl. S. St. 474; Coult., Fl. Colo. 345; Mac., Fl. Can. II, 25; Upham, Fl. Minn. 143; Roth., Wheel. Exp. 266; Cov., Fl. Ark. 223.

North America: Ranges with *S. angustifolium* Mill.

Minn. valley: N. E. and N. districts; infrequent; habitat like that of *S. angustifolium* Mill.

HERB.: *Bailey* 493, Agate bay; *Bailey 435*, Basswood lake.

Sisyrinchium angustifolium MILL. Dict. (1768).

? *S. gramineum* LAM. Enc. Meth. I, 403 (1783).
S. anceps CAV. Diss. VI, 345 (1790).
S. bermudiana MICHX. Fl. N. Am. II, 33 (1803) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 515; Britt., Fl. N. J. 238; Upham, Fl. Minn. 143; Mac., Fl. Can. II, 25: Chap., Fl. S. St. 474; Coult., Fl. Colo. 345; Richt., Pl. Eur. 259; Hook., Fl. Gt. Brit. 396; Nym., Fl. Eur.; Led., Fl. Ross. IV, 92; Wats., King Exp. 342; Cov., Fl. Ark. 223; Rothr., Alask. 456.

Introduced? in Ireland and N. Germany.

North America: Throughout, except Pac. coast region.

Minn. valley: Throughout; abundant; prairies, fields and grassy slopes.

HERB.: *Taylor 175*, Janesville; *Taylor 545*, Janesville; *Leonard 45*, Minneapolis; *Herrick 301*, Minneapolis; *Kassube 237*, Minneapolis; *Kassube 238*, Minneapolis; *Sandberg 562*, Red Wing; *Herb. Sheld. 1840*, Minneapolis; *Herb. Moyer 234*, Montevideo.

XXI. ORCHIDACEAE. Orchis Family.

Endlicher, *Gen. Pl.* 185 (1840); Benth. and Hook., *Gen. Pl.* III, 460 (1883); Pfitzer *in Engler and Prantl, Nat. Pflanz.* 2, VI, 52 (1888).

Genera: 350–400; cosmopolitan; principally tropical; very few subpolar; abundant in mt. districts, especially in the Himalayas.

Species: 10,000; 5000 (Benth. and Hook.); a great number are epiphytic.

CYPRIPEDILUM LINN. Gen. 687 (1737) em. Pfitz. (1888).

Criosanthes RAF. Jour. Phys. LXXXIX, 102 (1819).
Arietinum BECK, Bot. 352 (1833).

Benth. and Hook., *Gen. Pl.* III, 634: Durand, *Ind. Gen. Phan.* 404; Engler and Prantl, *Nat. Pflanz.* 2, VI, 82 (Pfitzer).

Living species: 20–25; temperate N. hemisphere to Japan, N. India and Mexico; also Peru? N. America, 10–15; Canada, 8; S. Sts., 4; California, 2–3; E. Sts., 6; Rocky mts., 2.

Cypripedilum acaule AIT. Hort. Kew. III, 161 (1789).

C. humile SALISB. Linn. Trans. I, 78 (1791).

Wats. and Coult., Gray's Man. 511; Britt., Fl. N. J. 236; Mac., Fl. Can. II, 22; Upham, Fl. Minn. 142; Chap., Fl. S. St. 464; Engl. Pfitzer, Nat. Pflanz. II, 6, 83.

North America: Newf. to Ft. Franklin and throughout E. Can.; S. to N. J. and N. Car.; W. to N. Ind., Mich. and Minn.

Minn. valley: N. E. and N. W. districts; tamarack swamps and swampy forest.

HERB: *Taylor 1103*, Glenwood; *Gedge 15*, Detroit lake; *Sheldon 1620*, Lake Calhoun; *Sandberg 559*, Center City; *Herb. Sheld. 1641*, Hennepin Co.

Cypripedilum spectabile Sw. Act. Holm. (1800)?

C. calceolus var. *g* LINN. Spec. 1346 (1762).
C. hirsutum MILL. Dict. ed. 8 (1768).
C. reginae WALT. Fl. Car. 222 (1788).
C. album AIT. Hort. Kew. III, 303 (1789).
C. canadense MICHX. Fl. N. Am. II, 161, (1803).

Wats. and Coult., Gray's Man. 6 ed. 511; Britt., Fl. N. J. 236; Upham, Fl. Minn. 142; Chap., Fl. S. St. 464; Mac., Fl. Can. II, 21; Engl. Pfltzer, Nat. Pflanz. II, 6, 83.

North America: N. S., N. Br., Q., Ont., to Georgian Bay; S. to Maine, W. N. Eng., N. J. and mts. of N. Car.; W. to Minn., Mo. and Ark.

Minn. valley: Forest district and probably sparingly throughout; woods and bogs; tamarack swamps.

HERB.: *Sheldon 616*, Wilton, Waseca Co.; *Herrick 298*, Minneapolis; *Kassube 234*, Minneapolis; *Ballard 1004*, Zumbrota; *Herrick 299*, Minneapolis; *Oestlund 195*, Ramsey Co.; *Oestlund 196*, Ramsey Co.; *Holzinger 277, 278*, Winona Co.; *Sandberg 558*, Cannon Falls; *Hammond 38*, Lake City.

Cypripedilum pubescens WILLD. Hort. Berol. I, 13 (1816).

C. calceolus WALT. Fl. Car. 221 (1788).

Wats. and Coult., Gray's Man. 6 ed. 511; Upham, Fl. Minn. 142; Britt., Fl. N. J. 236; Webb., Fl. Neb. 109; Coult., Fl. Colo. 344; Chap., Fl. S. St. 464; Mac., Fl. Can. II, 21; Engl. Pfltzer, Nat. Pflanz. II, 6, 81.

North America: N. S., N. Br., Q., Ont. to Georgian Bay and Lake Winnepegoosis; Saskatchewan to the Rockies; S. to N. J., Va., and W. to Minn., Kan., Neb., Colo. and Ark.

Minn. valley: Forest district; woods and swamps, perhaps westward.

HERB.: *Taylor 114*, Janesville; *Sandberg 556*, Goodhue Co.; *Kassube 233*, Minneapolis; *Sandberg 557*, Red Wing; *Herb. Sheld. 1694*, Minneapolis; *Herb. Wickersheim 118*, Mankato.

Cypripedilum parviflorum SALISB. Linn. Trans. I, 77 (1791).

C. calceolus MICHX. Fl. N. Am. II, 161 (1803).

Wats. and Coult., Gray's Man. 6 ed. 511; Britt., Fl. N. J. 236; Mac., Fl. Can. II, 20; Chap., Fl. S. St. 464; Coult., Fl. Colo. 344; Upham, Fl. Minn. 142; Mac., Fl. Can. II, 364; Cov., Fl. Ark. 223.

North America: Newf., Anticosti, Q., Ont. to Man. and Saskatchewan; S. to N. J. and Ga.; W. to Minn., Wyoming, Kan., Ark.; Brit. Col. at 3000 ft. alt.

Minn. valley: Forest district; to Kasota; N. E. and N. districts; bogs and damp woodland.

HERB.: *Ballard 16*, Chaska; *Kassube 232*, Minneapolis; *Holzinger 275*, Winona Co.; *Ballard 1003*, Zumbrota; *Holzinger 276*, Winona Co.; *Hammond 39*, Lake City; *Herb. Sheld. 1642*, Lake Calhoun, Hennepin Co.; *1676*, Minneapolis; *1901*, Ramsey Co.

Cypripedilum candidum MUHL. Willd. Spec. IV, 142 (1805).
Wats. and Coult., Gray's Man. 6 ed. 510; Britt., Fl. N. J. 236; Webb., Fl. Neb. 109; Upham, Fl. Minn. 142.

North America: N. Y., N. J., Penn. to Minn., Neb., Mo., Ky.

Minn. valley: Forest district and W. to Pomme des Terre valley; local or infrequent; bogs and wet woods.

HERB.: *Leiberg 72*, Blue Earth Co.; *Kassube 231*, Minneapolis; *Sandberg 555*, Cannon Falls; *Herb. Sheld. 1902*, Ramsey Co.; *Herb. Moyer 231*, Sparta township, Chippewa Co.

Cypripedilum arietenum R. BR. Hort. Kew. V, 222 (1813).
Cryosanthes borealis RAF. Jour. Phys. LXXXIX, 102 (1819).
Arietinum americanum BECK, Bot. 352 (1833).
Wats. and Coult., Gray's Man. 6 ed. 510; Upham, Fl. Minn. 142; Mac., Fl. Can. II, 20; Engl. Pfitzer, Nat. Pflanz. II, 6, 83.

North America: Q., Ont. to Saskatchewan; S. to Maine, N. N. Y., Mich. and Minn.

Minn. valley: N. W. district and N. edge; infrequent or local; swamps and wet forests.

HERB.: *Taylor 1122*, Glenwood; *Gedge 14*, Riverton.

ORCHIS LINN. Gen. 681 (1737) p. p.
Traunsteinera REICHB. Fl. Sax. 87 (1842).
Strateuma SALISB. Trans. Hort. Soc. I, 290 (1812).
Barlia PARLAT. Fl. It. III, 445 (1862?).
Loroglossum L. C. RICH. Mem. Mus. Par. IV, 47 (1808).
Himantoglossum SPRENG. Syst. III, 675 (1826).
Comperia C. KOCH, Linn. XXII, 287 (1848).
Anacamptis L. C. RICH. Mem. Mus. Par. IV, 47 (1808).
Aceras R. BR. Ait. Hort. Kew. ed. 2, V, 191 (1813).
Benth. and Hook., *Gen. Pl.* III, 620, 621; Durand, *Ind. Gen. Phan.* 402; Engler and Prantl, *Nat. Pflanz.* 2, VI, 88, 89, 90 (Pfitzer); Schenck, *Palæophyt.* 388.

Living species: 75–80; Europe; temperate Asia; N. Africa; Canaries; N. America. Europe, 75; N. America, 3; Canaries, 2; Russia, 25; Russian Europe, 25; Atl. N. America: Canada, 3; E. Sts., 2; S. Sts., 1.

Fossils: 2 genera of Orchidaceae are described by Massalongo from Eocene of Mt. Bolca.

Orchis spectabilis Linn. Spec. 943 (1753).
O. humilis Michx. Fl. N. Am. II, 155 (1803).
Habenaria spectabilis Spreng. Syst. II, 689 (1825).

Wats. and Coult., Gray's Man. 6 ed. 506; Britt., Fl. N. J. 223; Mac., Fl. Can. II, 12; Chap., Fl. S. St. 458; Webb., Fl. Neb. 109; Upham, Fl. Minn. 139; Cov., Fl. Ark. 222.

North America: N. Br., Ont. to N. Eng., N. J. and Ga.; W. to Minn., Dak., Neb., Mo. and Ark.

Minn. valley: Forest and N. W. districts; damp woods and shaded banks.

Herb.: *Taylor 217,* Janesville; *Sheldon 567,* Waseca; *Taylor 1166,* Glenwood; *Leiberg 66,* Blue Earth Co.; *Leiberg 67,* Blue Earth Co.; *Herb. Sheld. 1681,* Prospect Park, Hennepin Co.

HABENARIA Willd. Spec. IV, 44 (1805).
Sieberia Spreng. Anleit K. Gew. II, 282 (1802).
Gymnadenia R. Br. Hort. Kew. ed. 2. V, 191 (1813).
Nigritella L. C. Rich. Ann. Mus. Par. IV, 48 (1808).
Tinea Bivon. Giorn. Sci. Sic. 149 (1833).
Neotinea Reich. f. Poll. Orch. Comm. 149 (1864).
Leucorchis E. Mey. Preuss. Gatt, 50 (1839).
Bicchia Parlat. Fl. It. III, 396 (1862?)
Perularia Lindl. Bot. Reg. t. 1701 (1835).
Deroemeria Reich. f. Poll. Orch. Comm. 29 (1864).
Peristylis Blume, Bij. 404 (1826).
Gennaria Parlat. Fl. It. III, 404 (1862?).
Benthamia A. Rich. Orch. Fr. Bourb. 43 (1828).
Cybele Falc. Lindl. Veg. Kingd. 183c (1846).
Coeloglossum Hart. Scand. Fl. ed. IV, 283 (1842?).
Lindblomia Fries, Lindl. Bot. Not. 131 (1843).
Chaeradoplectron Schauer, Pl. Mey. 436 (1835).
Platanthera L. C. Rich. Ann. Mus. Par. IV, 48 (1808).
Lysias Salisb. Trans. Hort. Soc. I, 288 (1812).
Mecosa Blume, Bij. 403 (1826).
Centrochilus Schauer, Pl. Mey. 435 (1835).
Mitostigma Blume, Mus. Lugd.-Bat. II, 189 (1856).
Ponerorchis Reich. f. Linn. XXV, 227 (1851).
Dissorhyncium Schauer, Pl. Meyen. 434 (1835).
Bilabrella Lindl. Bot. Reg. 1701 (1835).
Ate Lindl. Gen. and Spec. Orch. 326 (1839).
Barlaea Reich. f. Linn. XLI, 54 (1867).
Macrocentrum Phillipi, Sert. Mendoc. II, 42 (——).
Synmeria Grah. Cat. Pl. Bomb. Add. (1839).
Montolivaea Reich. f. Ot. Hamb. 107 (1879).
Roeperocharis Reich. f. l. c. 104 (1879).

Benth. and Hook., *Gen. Pl.* III, 625; Durand, *Ind. Gen. Phan.* 403; Engler and Prantl, *Nat. Pflanz.* 2, VI, 91, seq. (Pfitzer).

Living species: 450–500; temperate and warmer regions; especially tropical Asia and America. Europe, 24; North America, 35–40; Canada, 23; E. Sts., 18–20; S. Sts., 17; California, 10–12; Rocky mts., 5; Pl. King., 3; Pl. Wheel., 3.

Habenaria psycodes (LINN.) GRAY.

Orchis psycodes LINN. Spec. 493 (1753).
O. fimbriata AIT. Hort. Kew. III, 297 (1789).
O. incisa and *fissa* MUHL. Willd. Spec. IV, 40 (1805).
Habenaria fimbriata R. BR. Hort. Kew. ed. 2, V, 193 (1813).
Orchis grandiflora BIGEL. Fl. Bost. 321 (1814).
Habenaria racemosa RAF. Ann. Nat. 15 (1820).
H. incisa and *fissa* TORR. Compend. 319 (1826).
H. grandiflora TORR. Compend. 319 (1826).
Platanthera fimbriata LINDL. Orch. 293 (1839).

Wats. and Coult., Gray's Man. 6 ed. 509; Britt., Fl. N. J. 235; Upham, Fl. Minn. 140; Mac., Fl. Can. II, 19; Chap., Fl. S. St. 460; Mac., Can. Fl. II, 363; Cov., Fl. Ark. 222.

North America: Newf., N. S., Anticosti to Lake Huron, Georgian Bay, Kaministiquia river and S. W. Man.; S. to N. J., N. Car.; W. to Minn., Ind. and Ark.

Minn. valley: Throughout forest and N. districts; cool bogs or tamarack swamps and sphagnum marshes.

HERB.: *Bailey 429*, Fall lake; *Oestlund 192*, Minnehaha; *Roberts 128*, Knife river; *Holzinger 273*, Winona Co.

Habenaria lacera (MICHX.) R. BR. Hort. Kew. ed. II, V, 193 (1813).

Orchis lacera MICHX. Fl. N. Am. II, 156 (1803).
O. psycodes MUHL. Willd. Spec. IV, 39 (1805).
Habenaria psycodes TORR. Compend. 317 (1826).
Platanthera psycodes LINDL. Orch. 294 (1839).
P. lacera GRAY, Ann. Lyc. N. Y. III, 228 (1836).

Wats. and Coult., Gray's Man. 6 ed. 509; Britt., Fl. N. J. 235; Upham, Fl. Minn. 140; Mac., Fl. Can. II, 19; Chap., Fl. S. St. 460; Cov., Fl. Ark. 222.

North America: N. S., N. Br., Ont. to N. Eng., N. J. and Ga.; W. to Minn., Mo. and Ark.

Minn. valley: N. E. and S. E. districts; rare or local; bogs and damp woodland.

HERB.: *Sandberg 544*, Cannon Falls.

Habenaria leucophaea (NUTT.) GRAY, Man. ed. V, 502 (1867).

Orchis leucophaea NUTT. Trans. Am. Phil. Soc. (II), V, 161 (1837).

Wats. and Coult., Gray's Man. 6 ed. 509; Webb., Fl. Neb. 109; Upham, Fl. Minn. 140; Mac., Fl. Can. II, 19; Cov., Fl. Ark. 222.

North America: N. S., N. B., Q., Ont. to W. N. Y., Ky. and Mo.; W. to Minn. and Neb.

Minn. valley: Forest district and N. W.; abundant; moist fields and meadow land.

HERB.: *Herrick 292*, Alexandria, Douglas Co.; *Leiberg 69*, Nicollet Co.

Habenaria hookeriana TORR. Ann. Lyc. N. Y. III, 229 (1836).

H. orbiculata GOLDIE, Edin. Phil. Jour. VI, 331 (1822).
Platanthera hookeriana LINDL. Orch. 286 (1839).

Wats. and Coult., Gray's Man. 6 ed. 508; Britt., Fl. N. J. 234; Upham, Fl. Minn. 140; Mac., Fl. Can. II, 17.

North America: N. S., N. Br., Q., Ont. to L. Huron and L. Superior region; S. to N. J., Minn., Iowa and Wisc.

Minn. valley: Forest district and principally N., N. E. and N. W.; local; damp woods and tamarack swamps.

HERB.: *Bailey 194*, Vermilion lake; *Sandberg 543*, Red Wing.

Habenaria dilatata (PURSH) HOOK. Fl. Exot. II, 95 (1823–27).

Orchis dilatata PURSH, Fl. Am. 588 (1814).
Platanthera hyperborea var. *dilatata* LINDL. in Beck. Bot. 347 (1833).
P. dilatata LINDL. Orch. 287 (1846).

Wats. and Coult., Gray's Man. 6 ed. 507; Upham, Fl. Minn. 140; Mac., Fl. Can. II. 15; Coult., Fl. Colo. 342; Richt., Pl. Eur. 281; Led., Fl. Ross. IV, 71; Wats., King Exp. 340; Roth., Wheel. Exp. 7, 17, 265; Rothr., Alask. 456.

Iceland and N. E. Asia; circumpolar.

North America: Atl. to Pac. in Can.; N. to Hudson Bay and Yukon region; S. to Conn., N. Y., Mich. and Minn.

Minn. valley: N. E. and N. W. districts; tamarack swamps.

HERB.: *Taylor 1112*, Glenwood; *Herrick 291*, Minneapolis; *Bailey 324*, St. Louis river; *Bailey 290*, St. Louis river.

Habenaria hyperborea (LINN.) R. BR. Hort. Kew. V, 193 (1813).

Orchis hyperborea LINN. Mant. I, 121 (1767).
O. koenigii RETZ. Fl. Scand. 1087 (1779).
Gymnadenia hyperborea LINK, Handb. I, 242 (1829).
Platanthera hyperborea and *koenigii*, *a*, LINDL. Orch. 286–287 (1846).

Wats. and Coult., Gray's Man. 6 ed. 507; Britt., Fl. N. J. 234; Upham, Fl. Minn. 140; Coult., Fl. Colo., 342; Mac., Fl. Can II, 14; Wats., Fl., Calif. II, 134; Richt., Pl. Eur. 281; Wats., King Exp. 340; Roth. Wheel Exp. 265.

Iceland.

North America: Greenland and Newf. to Ft. Franklin and Alaska; S. throughout Can. and to N. Eng., N. Y., N. J., S. Ill., Iowa, Minn. and Dak.; in mts. to S. Colo,

Minn. valley: Forest district, also N. and N. W. regions; abundant; damp woodland and swamps.

HERB.: *Taylor 1106*, Glenwood; *Taylor 1107*, Glenwood; *Sheldon 1155*, New Ulm; *Roberts 127*, North shore; *Kassube 227*, Minneapolis; *Arthur 18*, Vermilion lake; *Bailey 43*, Vermilion lake; *Bailey 384*, Mud lake.

Habenaria bracteata (WILLD.) R. BR. Hort. Kew. ed. 2, V, 192 (1813).

Orchis bracteata WILLD. Spec. IV, 34 (1805).
Satyrium bracteatum PERS. Syn. II, 507 (1807).
Peristylis bracteatus LINDL. Orch. 298 (1846).
Platanthera bracteata TORR. Fl. N. Y. II, 279 (1843).
Habenaria viridis var. *bracteata* REICH. DC. Prodr. XIII, 130 (1851).

Wats. and Coult., Gray's Man. 6 ed. 507; Britt., Fl. N. J. 234; Upham, Fl. Minn. 139; Chap., Fl. S. St. 460; Mac., Fl. Can. II, 14; Led., Fl. Ross. IV, 71; Webb., Appx. Neb. 26; Rothr., Alask 456.

Kamtschatka to the Caucasus mts.

North America: N. Br., Q., Ont. to Man., Rocky mts., Vancouver, Alaska; S. to N. Eng., N. J. and mts. of N. Car.; W. to Minn., Iowa, Ind. and Neb.

Minn. valley: Forest district and probably throughout; damp woods and tamarack swamps.

HERB.: *Sheldon 434*, Buffalo lake, Waseca Co.; *Sheldon 562*, Waseca; *Taylor 215*, Janesville; *Kassube 226*, Ramsey Co.; *Sandberg 542*, Red Wing; *Roberts 126*, Carlton's peak; *Leiberg 68*, Blue Earth Co.

Habenaria flava (LINN.) GRAY, Man. ed. V, 499 (1867).

Orchis flava LINN. Spec. 942 (1753).
O. virescens WILLD. Spec. IV, 37 (1805).
Habenaria herbiola R. BR. Hort. Kew. ed. 2, V, 193 (1813).
Orchis fuscescens and *herbiola* PURSH, Fl. Am. 587 (1814).
O. bidentata ELL. Sk. II, 448 (1824).
Habenaria virescens SPRENG. Syst. III, 688 (1826).
H. fuscescens TORR. Compend. 318 (1826).
Platanthera herbiola LINDL. Orch. 287 (1846).
P. flava GRAY, Man. ed. I, 471 (1848).

Wats. and Coult., Gray's Man. 6 ed. 507; Chap., Fl. S. St. 459; Upham, Fl. Minn. 139; Mac., Fl. Can. II, 13; Cov., Fl. Ark. 222.

North America: Ont. to Thunder bay and Kaministiquia river; S. to N. Eng., N. J., Fla.; W. to Minn. and Ark.

Minn. valley: N. E. district and N. edge; rare or local; damp woods or swamps.

HERB.: *Oestlund 191*, Minneapolis; *Sandberg 541*, Vasa.

Habenaria tridentata (WILLD.) HOOK. Fl. Bor. Am. II, (1840).

Orchis tridentata WILLD. Spec. IV. 41 (1805).
? *O. clavellata* MICHX. Fl. II, 155 (1803).

Platanthera tipuloides LINDL. Orch. 285 (1846).
Gymnadenia tridentata LINDL. Orch. 227 (1846).
Wats. and Coult., Gray's Man. 6 ed. 506; Britt., Fl. N. J. 234; Upham, Fl. Minn. 139; Mac., Fl.Can. II, 13; Cov., Fl. Ark. 223.

North America: Newf. N. Br., Q., Ont. to L. Huron and L. Superior; S. to N. Eng., N. J. and N. Car.; W. to Minn., Ind. and Ark.

Minn. valley: N. E. district; infrequent; damp woods and near springs.

HERB.: *Bailey 10a,* White Bear lake.

POGONIA JUSS. Gen. 65 (1789).
Nervilia GAUD. Freyc. Bot. Voy. 422 (1826).
Cordylia BLUME, Bij. 416 (1826).
Rophostemon BLUME, Fl. Jav. 6 (1828).
Aplostellis THOU. Orch. Ile. Afr. t. 24 (1806).
Haplostellis ENDL. Gen. 219 (1838).
Cleistes L. C. RICH. Mem. Mus. Par. IV, 31 (1818).
Triphora NUTT. Gen. II, 192 (1818).
Codonorchis LINDL. Gen. et. Spec. Orch. 410 (1840).
Isotria and **Odonectis** RAF. Desf. Jour. Bot. I, 220, 221 (1808).
Didymoplexis GRIFF. Calc. Journ. IV, 383 (1844).
Benth. and Hook., *Gen. Pl.* III, 615; Durand, *Ind. Gen. Phan.* 401; Engler and Prantl, *Nat. Pflanz.* 2,VI, 106.

Living species: 43; cosmopolitan. N. America, 6; E. Sts., 5; Canada, 3; S. Sts., 4.

Pogonia ophioglossoides (LINN.) KER. Bot. Reg. 148 (1816).
Arethusa ophioglossoides LINN. Spec. 951 (1753).
Wats. and Coult., Gray's Man. 6 ed. 505; Upham, Fl. Minn. 141; Mac., Fl. Can. II, 11; Britt., Fl. N. J. 233; Chap., Fl. S. St. 457; Engl. Pfitzer, Nat. Pflanz. II, 6, 106.

Japan?

North America: Newf., N. S., N. Br., Q., Ont.; S. to N. Eng., N. J. and Fla.; W. to N. Ind. and Minn.

Minn. valley: N. E. and N. W. districts; local, bogs and tamarack swamps.

HERB.: *Oestlund 193,* Ramsey Co.; *Herrick 294,* Minneapolis; *Kassube 229,* Minneapolis; *Sandberg 549,* Chisago Co.; *Sandberg, 550,* Chisago Co.; *Herb. Sheld. 1756,* Ramsey Co.

ARETHUSA LINN. Gen. ed. V, 905 (1754).
Benth. and Hook., *Gen. Pl.* III, 614; Durand, *Ind. Gen. Phan.* 401; Engler and Prantl, *Nat. Pflanz.* 2, VI, 107 (Pfitzer).

Living species: 2; Japan, 1; Atl. N. Amer., 1.

Arethusa bulbosa LINN. Spec. 950 (1753).
Wats. and Coult., Gray's Man. 6 ed. 504; Britt., Fl. N. J. 232; Upham,

Fl. Minn. 141; Mac., Fl. Can. II, 10; Chap., Fl. S. St. 458; Engl. Pfitzer, Nat. Pflanz. II, 6, 107.

North America: Newf., N. S., N. Br., Q., Ont.; S. to N. J. and mts. of N. Car.; W. to Minn. and Ind.

Minn. valley: N. E. district; rare; bogs and tamarack swamps.

HERB.: *Sandberg 548,* Chisago Co.

GYROSTACHYS PERS. Syn. II, 511 (1807).

Spiranthes L. C. RICH. Mem. Mus. Par. IV, 50 (1818).
Aristotelea LOUR. Cochinch. 522 (1790) *not L'Her.*
Ibidium SALISB. Trans. Hort. Soc. I, 291 (1812).
Cyclopogon PRESL, Rel. Haenk. I, 93 (1830).
Sauroglossum LINDL. Bot. Reg. t. 1618 (1835).
Synassa LINDL. Bot. Reg. t. 1618 (1835).
Sarcoglottis PRESL, Rel. Haenk. I, 95 (1830).
Stenorrhyncus L. C. RICH. Mem. Mus. Par. IV, 59 (1818).

Benth. and Hook., *Gen. Pl.* III, 596; Durand, *Ind. Gen. Phan.* 399; Engler and Prantl, *Nat. Pflanz.* 2, VI, 113 (Pfitzer).

Living species: 75–80; temperate and tropical regions. Russia, 4; Europe, 3; Atl. N. America, 13 (endemic); California, 2; S. Sts., 7; Canada, 4; E. Sts., 6.

Gyrostachys gracilis (BIGEL.) OK. Rev. Gen II, 664 (1891).

Spiranthes gracilis BIGEL. Fl. Bost. 322 (1814).

Wats. and Coult., Gray's Man. 6 ed. 503; Britt., Fl. N. J 232; Upham, Fl. Minn. 141; Mac., Fl. Can. II, 8; Chap., Fl. S. St. 462; Cov., Fl. Ark. 222.

North America: N. S., Q., Ont. to Man. and Saskatchewan; N. to Ft. Franklin on Mackenzie; S. to N. Eng., N. J. and Fl.; W. to Minn. and Ark.

Minn. valley: N. E. district, N. edge and N. W.; woods and hillsides in shaded places.

HERB.: *Bailey 15,* Vermilion lake; *Bailey 181,* Vermilion lake.

Gyrostachys cernua (LINN.) OK. Rev. Gen. II, 664 (1891).

Ophrys cernua LINN. Spec. 946 (1753).
Neottia cernua WILLD. Spec. IV, 75 (1805).
Spiranthes cernua RICH. Mem. Mus. IV, 59 (1817).
Neottia tortilis BARTON, Fl. N. Am. II, 35 (1822).

Wats. and Coult., Gray's Man. 6 ed. 502; Mac., Fl. Can. II, 8; Britt., Fl. N. J. 231; Upham, Fl. Minn. 140; Chap., Fl. S. St. 462; Cov., Fl. Ark. 222; Webb., Appx. Neb. 26.

North America: N. S., Q., Ont. to Georgian Bay; S. to N. Eng., N. J., Fla. and Miss.; W. to Minn., Neb., Mo. and Ark.

Minn. valley: Forest district; bogs and low, wet meadows.

HERB.: *Bailey 354*, Mud river; *Bailey 559*, Vermilion lake; *Bailey 444*, Long lake; *Sandberg 547*, "Minnesota."

Gyrostachys romanzowiana (CHAM.)

Neottia gemmipara SM. Engl. Fl. IV, 36 (1828).
Spiranthes romanzowiana CHAM. Linn. III, 27 (1828).
S. gemmipara LINDL. Syn. Br. Fl. 257 (1829).

Wats. and Coult., Gray's Man. 6 ed. 502; Webb., Fl. Neb. 109; Upham, Fl. Minn. 140; Coult., Fl. Colo. 343; Wats., Fl. Calif. II, 135; Mac., Fl. Can. II, 8; Led., Fl. Ross. IV, 84; Richt., Pl. Eur. 285; Hook., Fl. Gt. Brit. 387; Nym., Fl. Eur.; Wats., King Exp. 341; Roth., Wheel. Exp. 17, 265; Rothr., Alask. 456.

Ireland, Unalascha, Kamtschatka.

North America: Newf. to Vancouver; N. to Alaska and Arctic circle; S. in Sierras to Calif.; in Rockies to Colo.; E. to W. Neb., Dak., Minn., Mich., N. Eng. and Penn.

Minn. valley: Forest district and N. W. district; bogs and marshes.

HERB.: *Taylor 1110*, Glenwood; *Ballard 894*, St. Bonifacius; *Ballard 867*, Waconia; *Ballard 714*, Benton, Carver Co.; *Ballard 824*, Page lake, Carver Co.; *Ballard 794*, Goose lake, Carver Co.; *Herrick 293*, Minneapolis; *Kassube 228*, Minneapolis; *Sandberg 546*, Red Wing.

PERAMIUM SALISB. Trans. Hort. Soc. I, 301 (1812).

Goodyera R. BR. Hort. Kew. ed. 2, V, 197 (1813).
Gonogona LINK, Handb Bot. I. 248 (1829).
Tussaca RAF. Journ. Phys. LXXXIX, 261 (1819).
Epipactis HALL. Enum. Helv. I, 277 (1742) *not Crantz*.
Orchiodes TREW. Act. Caes. Car. III, 409 (1736).
Cionisaccus BREDA, Orch. Kuhl.-Hass. 1 (1827).
Cordylestylis FALC. Hook. Jour. Bot. IV, 74 (1841).
Leucostachys HOFFMANNS, Preisv. Orch. (1842).
Georchis LINDL. Gen. et Spec. Orch. 495 (1840).

Benth. and Hook., *Gen. Pl.* III, 602; Durand, *Ind. Gen. Phan.* 400; Engler and Prantl, *Nat. Pflanz.* 2, VI, 117 (Pfitzer); O. Kuntze, *Rev. Gen.* II, 674.

Living species: 25; N. temperate regions to tropical Asia, N. Caledonia and the Mascarene Isls. Europe and Siberia, 1; N. America, 3; E. Sts., 2; California, 1; Canada, 3; S. Sts., 3; Rocky mts., 1.

Peramium pubescens (WILLD.) SALISB. Trans. Hort. Soc. 261 (1812).

Satyrium repens MICHX. Fl. N. Am. 157 (1803) *in part*.
Neottia pubescens WILLD. Spec. IV, 76 (1805).
Goodyera pubescens R. BR. Hort. Kew. V, 198 (1813).
Orchiodes pubescens OK. Rev. Gen. II, 675 (1891).

Wats. and Coult., Gray's Man. 6 ed. 503; Britt., Fl. N. J. 232; Mac., Fl. Can. II, 9; Upham, Fl. Minn. 140; Chap., Fl. S. St. 463.

North America: Newf., N. Br., Q., Ont. to L. Superior region and Man.; S. to N. Eng., N J. and Fla.; W. to Mich. and Minn.

Minn. valley: N. edge; rare; shaded rich banks of streams and deep woods.

HERB.: *Juni 14,* Put-In-Bay; *Sandberg 545,* Cannon Falls.

Peramium repens (LINN.) SALISB. Trans. Hort. Soc. 261 (1812).

Satyrium repens LINN. Spec. 945 (1753).
Serapias repens CHAIX. Vill. Dauph. II, 53 (1787).
Satyrium hirsutum GILIB. Exerc. Phyt. II, 484 (1792).
Neottia repens SW. Act. Holm. 226 (1800).
Goodyera repens R. BR. Hort. Kew V. 198 (1813).
Tussacia repens RAF. Journ. Phys. IV, 270 (1814).
Orchiodes repens OK. Rev. Gen. II, 674 (1891).

Wats. and Coult., Gray's Man. 6 ed. 503; Mac., Fl. Can. II, 9; Chap., Fl. S. St. 463; Upham, Fl. Minn. 140; Nym., Fl. Eur.; Richt., Pl. Eur. 286; Hook., Fl. Gt. Brit. 386; Led., Fl. Ross. IV, 86; Herd , Fl. Eur. Russ. 128; Engl. Pfitzer, Nat. Pflanz. II, 6, 117; Hart., Fl. Scand. I, 393.

N. and mid. Europe to Alps and Dalmatia; Siberia, Caucasus and Himalayas.

North America: N. S., N. Br., Q., Ont. to Man., Saskatchewan, N. W. T., Ft. Franklin on Mackenzie and Pac.; S. to Minn., Mich. N. Eng. and in Alleghenies to mts. of N. Car.

Minn. valley: N. E. district; rare and local; shaded banks and woods.

HERB.: *Roberts 129,* Cascade river; *Bailey 373,* Mud lake; *Roberts 130,* Grand Marais; *Holway 29,* Vermilion lake; *Bailey 177,* Vermilion lake; *Bailey 300,* St. Louis river.

ACHROANTHES RAF. Med. Rep. V, 350 (1808).

? **Malaxis** SW. Prodr. 8, 119 (1788).
Microstylis NUTT. Gen. II, 196 (1818).
Pedilea LINDL. Orch. Sel. 27 (1826).
Crepidium BLUME, Bij. 387 (1826).
Pterochilus HOOK. and ARN. Bot. Beech. 71 (1841).
Dienia LINDL. Gen. et Spec. Orch. 22 (1840).
Cheiropterocephalus RODRIG. ex Pfitz. l. c. (1888).

Benth. and Hook., *Gen. Pl.* III, 494; Durand, *Ind. Gen. Phan.* 386; Engler and Prantl, *Nat. Pflanz.* 2, VI, 130 (Pfitzer); O. Kuntze, *Rev. Gen.* II, 672.

Living species: 70; temperate N. hemisphere; tropical Asia and America. Russia, 5; Europe, 1; N. America, 2–3; Canada, 2; E. Sts., 2; S. Sts., 2; Pl. Wheel., 1.

Achroanthes unifolia (MICHX.) RAF. Med. Rep. V, 350 (1808).

Malaxis unifolia MICHX. Fl. N. Am. II, 157 (1803).
M. ophioglossoides WILLD. Spec. IV, 90 (1805).
Microstylis ophioglossoides NUTT. Gen. II, 196 (1818).
M. unifolia B. S. P. Cat. N. Y. (1888).

Wats. and Coult., Gray's Man. 6 ed. 498; Britt., Fl. N. J. 229; Mac., Fl. Can. II, 2; Upham, Fl. Minn. 141; Chap., Fl. S. St. 453; Herd., Fl. Eur. Russ. 126.

Russia ?

North America: Newf., N. S., N. Br., Q., Ont. to L. Winnipeg and Saskatchewan; S. to N. Eng., N. J. and Fla.; W. to Minn. and Mo.

Minn. valley: S. E. district; rare and local; damp woods or banks of streams.

LEPTORCHIS THOU. N. Bull. Soc. Phil. 314 (1809).

Cestichis THOU. Afr. Isls. (1818).
Liparis L. C. RICH. Mem. Mus. Par. IV, 52 (1818).
Sturmia REICH. Consp. 69 (1828).
Alipsa HOFFMANSG. Linn. XVI, bb. 228 (1842).
Empusa LINDL. Bot. Reg. 825 (1836?).
Empusaria REICH. Consp. 69 (1828).
Ephippianthus REICH. F. Schmidt. Reise Am. Bot. 180 (——).
Platystylis BLUME, Bij. 389 (1826).
Gastroglottis BLUME, Bij. 397 (1826).

Benth. and Hook., *Gen. Pl.* III, 495; Durand, *Ind. Gen. Phan.* 386; O. Kuntze, *Rev. Gen.* II, 669; Engler and Prantl, *Nat. Pflanz.* 2, VI, 128, 130 (Pfitzer).

Living species: 100; temperate and tropical regions. Few in N. temperate zone. Canada, 1; E. Sts., 2; S. Sts., 1. N. America, 1–2; Europe, 1; Russian Europe, 1.

Leptorchis loeselii (LINN.).

Orchis loeselii LINN. Spec. 946 (1753).
? *Ophrys latifolia* LINN. Fl. Suec. ed. II, 316 (1755).
O. paludosa Fl. Dan. 877 (1782).
O. trigona GILIB. Exerc. Phyt. II, 488 (1792).
Cymbidium loeselii Sw. Nov. Act. Ups. 76 (1799).
Malaxis loeselii Sw. Holm. Act. Bot. 235 (1800).
M. correana BART. Prodr. Phil. 86 (1815).
Liparis loeselii RICH. Mem. Mus. IV, 60 (1817).
Malaxis longifolia BART. Fl. Phil. II, 142 (1824).
Liparis correana SPRENG. Syst. II, 740 (1825).
Sturmia loeselii REICHB. Pl. Crit. IV, 39 (1826).

Wats. and Coult., Gray's Man. 6 ed. 499; Britt., Fl. N. J. 230; Mac., Fl. Can. II, 3; Upham, Fl. Minn. 141; Richt., Pl. Eur. 286; Led., Fl. Ross. IV, 52; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 384; Herd., Fl. Eur. Russ. 126; Hart., Fl. Scand. I, 397.

Middle and N. Europe to Asia. S. to Italy and Turkey.

North America: N. S., N. Br., Q., Ont. to Saskatchewan; S. to N. J. and Md.; W. to Minn. and S. Ills.

Minn. valley: N. E. district; N. edge and N W. district; tamarack swamps.

HERB.: *Taylor 1145*, Glenwood; *Ballard 621*, Chaska; *Herrick 297*, Minneapolis.

Leptorchis liliifolia (LINN.) OK. Rev. Gen. II, 671 (1891).

Ophrys liliifolia LINN. Spec. 946 (1753).
Cymbidium liliifolium WALT. Fl. Car. (1788).
Malaxis liliifolia WILLD. Spec. IV, 92 (1805).
Liparis liliifolia RICH. Orch. Eur. 38 (1818).

Wats. and Coult., Gray's Man. 6 ed. 499; Britt., Fl. N. J. 230; Upham, Fl. Minn. 141; Chap., Fl. S. St. 454.

North America: N. Eng., N. J. and Ga.; W. to Minn. and Mo.

Minn. valley: N. E. and S. E. districts; rare and local; moist forests and swampy places.

HERB.: *Sandberg 553*, Vasa; *Holzinger 274*, Stockton.

CORALLORHIZA R. BR. Hort. Kew. ed. 2, V, 209 (1813).

Coralliorrhiza PFITZ. Nat. Pflanz. l. c. (1888).

Benth. and Hook., *Gen. Pl.* III, 497; Durand, *Ind. Gen. Phan.* 386; Engler and Prantl, Nat. Pflanz. 2, VI, 131 (Pfitzer).

Living species: 12; temperate N. regions. Russia, 3; Europe, 1; N. America, 7–8; California, 5; Rocky mts., 3; E. Sts., 4; Canada, 5; S. Sts., 3; Pl. King, 1; Pl. Wheel., 1.

Corallorhiza multiflora NUTT. Journ. Acad. Phil. III, 7 (1823).

C. innata NUTT. Gen. II, 194 (1818).

Wats. and Coult., Gray's Man. 6 ed. 500; Britt., Fl. N. J. 230; Mac., Fl. Can. II, 5; Coult., Fl. Colo. 341; Upham, Fl. Minn. 142; Wats., Fl. Calif. II, 131; Webb., Appx. Neb. 26.

North America: Newf. to Selkirks and Vancouver; S. to Wahsatch, Colo. river and San Diego; E. to Minn., Iowa, Neb., Mo., N. Eng. and N. J.

Minn. valley: N. districts; rare; drier or damp woods

HERB.: *Arthur 48*, Vermilion lake.

Corallorhiza corallorhiza (LINN.).

Ophrys corallorhiza LINN. Spec. 945 (1753).
Epipactis corallorhiza CR. Stirp. Austr. 464 (1769).
Cymbidium neottia SCOP. Fl. Carn. 2 ed. II, 207 (1772).
Helleborine corallorhiza SCHM. Fl. Böhm. 79 (1794).
Cymbidium corallorhiza SW. Act. Holm. 738 (1800).
Corallorhiza innata R. BR. Hort. Kew. V, 209 (1813).

Cymbidium nemoralis Sw. Veg. Scand. 32 (1814).
Corallorhiza halleri Rich. Mem. Mus. IV, 61 (1817).
C. verna Nutt. Jour. Acad. Phil. 135 (1823).
C. intacta Cham. and Schlecht. Linn. III, 35 (1828).
C. dentata Host. Fl. Austr. II, 547 (1831).

Wats. and Coult., Gray's Man. 6 ed. 500; Britt., Fl. N. J. 230; Mac., Fl. Can. II, 4; Upham, Fl. Minn. 142; Chap., Fl. S. St. 454; Coult., Fl. Colo. 341; Wats., Fl. Calif. II, 132; Led., Fl. Ross, IV, 49; Hook., Fl. Gt. Brit. 385; Trautv., Fl. Sib. 113; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 126; Engl. Pfitzer, Nat. Pflanz. II, 6, 131; Hart., Fl. Scand. I, 397; Webb., Appx. Neb. 26; Rothr., Alask, 456.

Arctic, N. and mid. Europe; all Siberia to Kamtschatka.

North America: Canada throughout; S. to Washington and Colo.; E. to N. Eng. and mts. of Ga.

Minn. valley: N. districts; rare; swamps and deep woods.

Herb.: *Roberts 131*, Hoodoo Pt.; *Bailey 89*, Vermilion lake; *Bailey 247*, Vermilion lake.

CATHEA Salisb. Trans. Hort. Soc. I, 300 (1812).

Calopogon R. Br. Hort. Kew. ed. 2, V. 204 (1813).
Limodorum Linn. (1740) ex Kuntze l. c., *not Ludw.*
Helleborine Martyn, Hist. Pl. t. 50 (1736).

Benth. and Hook., *Gen. Pl.* III, 615; O. Kuntze, *Rev. Gen.* II, 665; Durand, *Ind. Gen. Phan.* 401; Engler and Prantl, *Nat. Pflanz.* 2, VI, 150 (Pfitzer).

Living species: 4; N. America. S. Sts., 4; Canada, 1; E. Sts., 1.

Cathea tuberosa (Linn.) Salisb. Trans. Hort. Soc. I, l. c. (1812).

Limodorum tuberosum Linn. Spec. 950 (1753).
Cymbidium pulchellum Willd. Spec. IV, 105 (1805).
Calopogon pulchellum R. Br. Hort. Kew. ed. 2, V, 204 (1813).
Calopogon tuberosus B. S. P. Cat. N. Y. (1888).
Helleborine tuberosus OK. Rev. Gen. II, 665 (1891).

Wats. and Coult., Gray's Man. 6 ed. 505; Mac., Fl. Can. II, 10; Upham, Fl. Minn. 141; Chap., Fl. S. St. 456; Britt., Fl. N. J. 232; Cov., Fl. Ark. 222.

North America: Newf., N. S., N. Br., Q., Ont.; S. to N. J. and Fla.; W. to Minn., Mo. and Ark.

Minn. valley: Forest district and far N. W.; not rare; peat bogs and tamarack swamps.

Herb.: *Taylor 1111*, Glenwood; *Kassube 230*, Rocky lake; *Oestlund 194*, Ramsey Co.; *Herrick 295*, Minneapolis; *Herrick 296*, Minneapolis; *Sandberg 551*, Chisago Co.; *Sandberg 552*, Red Wing.

APLECTRUM NUTT. Gen. II, 197 (1818).

Benth. and Hook., *Gen. Pl.* III, 497; Durand, *Ind. Gen. Phan.* 386; Engler and Prantl, *Nat. Pflanz.* 2, VI, 156 (Pfitzer).

Living species: 1; N. America.

Aplectrum spicatum (WALT.) B. S. P. Cat. N. Y. (1888).

Arethusa spicata WALT. Fl. Car. 222 (1788).
Cymbidium hiemale MUHL. Willd. Spec. IV, 107 (1805).
Aplectrum hiemale NUTT. Gen. II, 197 (1818).
Corallorhiza hiemalis BART. Fl. N. Am. II, 52 (1822).

Wats. and Coult.. Gray's Man. 6 ed. 500; Britt., Fl. N J. 230; Mac., Fl. Can. II, 4; Upham, Fl. Minn. 142; Chap., Fl. S. St. 455; Wats., Fl. Calif. II, 133; Coult., Fl. Colo. 342; Engl. Pfitzer, Nat. Pflanz. II, 6, 156; Cov., Fl. Ark. 222.

North America: Ont. to Saskatchewan and Oregon; S. to N. Eng., N. J. and Ga.; W. to Minn., Mo. and Ark.

Minn. valley: Forest district; local and rare; peat bogs and tamarack swamps.

HERB.: *Leiberg 70,* Blue Earth Co.; *Leiberg 71,* Blue Earth Co.; *Sandberg 554,* Washington Co.

DICOTYLEDONES.

ARCHICHLAMYDEAE.

XXII. JUGLANDACEAE. Walnut Family.

Endlicher, *Gen. Pl.* 1125 (1840); Benth. and Hook., *Gen. Pl.* III, 397 (1880); Engler *in Engler and Prantl, Nat. Pflanz.* 3, I, 19 (1887).

Genera: 6; temperate regions of N. hemisphere; within the tropics in Central America and the Himalayan region. Tertiary and Cretaceous distribution to the Polar regions.

Species: 33, living; 30±, fossil in Upper Cretaceous, Tertiary and Quaternary beds.

JUGLANS LINN. Gen. 727 (1737) p. p.

Wallia ALEF. Bonplandia, 335 (1861).

Benth. and Hook., *Gen. Pl.* III, 398; Durand, *Ind. Gen. Phan.* 379; Engler and Prantl, *Nat. Pflanz.* 3, I, 24 (Engler); Schenck, *Palaeophyt.* 445.

Living species: 7–8; temperate N. hemisphere and in Jamaica. Europe and mid. Asia, 1; E. Asia and Japan, 2; Russian Europe, 1; N. America, 4–5; E. Sts., S. Sts., Canada, 2; Tex. and N. Mex., 1; California, 1.

Fossil species: 10±; Lower Cretaceous—*Juglandiphyllum,* Potomac region (*Fontaine*); Upper Cretaceous, Nebraska, Greenland (*Heer, Lesquereaux*); Tertiary, Alaska, Vancouver, Iceland, Spitzbergen (*Heer*), France (*Saporta*); Pliocene, Japan (*Nathorst*); France (*Saporta*).

Juglans nigra LINN. Spec. 997 (1753).

J. nigra oblonga MARSH, Arbust. Amer. 67 (1785).

Wallia nigra ALEF. Bonplandia, 334 (1861).

Wats. and Coult., Gray's Man. 6 ed. 467; Britt., Fl. N. J. 219; Mac., Fl. Can. I, 434; Webb., Fl. Neb. 110; Chap., Fl. S. St. 419; Upham, Fl. Minn. 125; Cov., Fl. Ark. 219; Engl., Nat. Pflanz. III, 1, 24.

Bolivia.

North America: N. of L. Erie to W. Mass. and Toronto; S. to Conn., N. J. and Fla.; W. to S. Minn., E. Neb., Kan. and Ark.

Minn. valley: Forest district to Redwood and Brown Cos.; rich woods; absent far N. E.

HERB.: *Taylor 134,* Janesville; *Sheldon 807,* Sigel township, Brown Co.; *Ballard 552,* Spring lake, Scott Co.; *Sheldon 623,* Wilton, Waseca Co.

Juglans cinerea LINN. Spec. 1415 (1753).

J. oblonga MILL. Dict. (1768).

J. cathartica MICHX. Arb. I, 166 (1810).

Carya cathartica BART. Comp. Fl. Phil. II, 178 (1824).

Wallia cinerea ALEF. Bonplandia 334 (1861).

Wats. and Coult., Gray's Man. 6 ed. 467; Britt., Fl. N. J. 219; Webb., Fl. Neb. 110; Mac., Fl. Can. I, 435; Upham, Fl. Minn. 125; Chap., Fl. S. St. 419; Cov., Fl. Ark. 219; Engl., Nat. Pflanz. III, 1, 25.

North America: N. Br., Q., Ont. to Georgian bay, N. Eng., N. J. to mts. of Ga.; W. to Minn., Dak., Neb., E. Kan. and Ark.

Minn. valley: Forest district throughout; dry or damp woods.

HERB: *Sheldon 379,* Madison Lake, Blue Earth Co.; *Sheldon 789,* Sleepy Eye; *Ballard 53n,* Chaska; *Taylor 88,* Elysian; *Taylor 668,* Cobb river, Blue Earth Co.; *Holzinger 214,* Winona Co.; *Holzinger 215,* Winona bluffs; *Herb. Sheld. 1864,* Minneapolis.

SCORIA RAF. Med. Rep. (1808).

Hicoria RAF. Fl. Lud. (1817).

Carya NUTT. Gen. II, 220 (1818).

Benth. and Hook., *Gen. Pl.* III, 398; Durand, *Ind. Gen. Phan.* 379; O. Kuntze, Rev. Gen. II, 637; Engler and Prantl, *Nat. Pflanz.* 3, I, 25 (Engler); Schenck, *Palaeophyt.* 447.

Living species: 10; N. America. S. Sts., 9; E. Sts., 7; Canada, 4; Mex., 1.

Fossil species: 10–15; Tertiary, Greenland (*Heer*); Spitzbergen (*Unger, Heer*); Italy (*Brongniart*); France, Hungary, Bohemia, Cantal (*Saporta, Unger, Göppert, Heer*); Wyoming and Colo. (*Lesquereaux*).

Scoria minima (MARSH.).

Juglans alba-minima MARSH. Arbust. Amer. 68 (1785).
J. angustifolia LAM. Enc. Meth. IV, 504 (1797).
J. amara MICHX. Sylv. I, 177 (1810).
Hicoria amara RAF. Fl. Lud. 109 (1817).
Carya amara NUTT. Gen. II, 222 (1818).
Hicoria minima BRITT. Torr. Bull. XV, (1888).

Wats. and Coult., Gray's Man. 6 ed.; Upham, Fl. Minn. 125.

Minn. valley: Forest district, throughout; damp woods and banks of streams.

HERB.: *Sheldon 312*, Madison Lake, Blue Earth Co.; *Ballard 88*, Chaska; *Sheldon 814*, Sigel township, Brown Co.; *Herrick 274*, Minnetonka; *Leiberg 59*, Blue Earth Co.; *Holzinger 252*, Winona Co.

Scoria ovata (MILL.).

Juglans ovata MILL. Dict. (1768).
? *J. squamosa* LAM. Enc. Meth. IV, 504 (1797).
J. compressa GAERTN. Fruct. II, 50 (1791).
J. alba MICHX. Fl. N. Am. II, 193 (1803).
Carya microcarpa NUTT. Gen. II, 221 (1818).
C. alba NUTT. Gen. II, 221 (1818).
Hicoria ovata BRITT. Torr. Bull. XV, (1888).

Wats. and Coult., Gray's Man. 6 ed. 468; Mac. Fl. Can. I, 433; Webb., Fl. Neb. 110; Chap., Fl. S. St. 418; Cov., Fl. Ark. 219; Engl., Nat. Pflanz. III, 1, 25; Upham, Fl. Minn. 125.

North America: N. of Lake Erie and to St. Clair river; N. Eng., N. J. to Fla.; W. to Minn., Neb,, Kan. and N. Mex.

Minn. valley: Reported from the S. E. edge; rich woodland.

XXIII. MYRICACEAE. Sweet-Gale Family.

Endlicher, *Gen. Pl.* 270 (1840); Benth. and Hook., *Gen. Pl.* III, 400 (1880); Engler, *in Engler and Prantl, Nat. Pflanz.* 3, I, 26 (1887).

Genera: 1; temperate and warmer regions except Australia. Tertiary distribution principally European and N. American to Greenland; and Asia to Saghalin.

Species: 35±; fossil sp. very numerous.

MYRICA LINN. Gen. 744 (1737).

Nageia GAERTN. Fruct. I, 191 (1788).
Morella LOUR. Cochinch, 548 (1790).
Comptonia BANKS, Gaertn. Fruct. II, 58 t. 90 (1791).
Faya WEBB. Phyt. Can. IV, 272 (1847).
Gale SPACH. Suit. Buff. XI, 258 (1842).

Baillon, *Hist. Pl.* VI, 259; Benth. and Hook., *Gen. Pl.* III. 400; Durand, *Ind. Gen. Phan.* 380; Engler and Prantl, *Nat. Pflanz.* 3, I. 27 (Engler); Schenck, *Palaeophyt.* 452.

Living species: 30–35; temperate and warmer regions, except Australia. Only 2 species in Europe. N. America, 6; Canada, 4; California, 2; Tex.-Mex., 1; S. Sts., 3; E. Sts., 3.

Fossil species: A large number in the Tertiary of Europe, Saghalin, Greenland; Cretaceous in N. America.

Myrica asplenifolia (LINN.) BAILL. Hist. Pl. VI, 242 (1877).
Liquidambar asplenifolium LINN. Spec. 1418 (1753).
Comptonia asplenifolia BANKS, Gaert. Fruct. II, 58 (1791).
Liquidambar peregrinum REICH. ex Steud. Nom. II, 54 (1840).
Myrica comptonia C. DC. Prodr. XVI, 2, 151 (1864).

Wats. and Coult., Gray's Man. 6 ed. 470; Britt., Fl, N. J. 220; Upham, Fl. Minn. 127; Mac., Fl. Can. I, 435; Chap., Fl. S. St. 427; Engl., Nat. Pflanz. III, 1, 28.

North America: N. S., N. Br., Q., Ont. to Man. and Saskatchewan; S. to N. Eng., N. J. and N. Car.; W. to Minn. and Ind.

Minn. valley: Reported from region S. of L. Minnetonka and along N. edge; rare or doubtful; dry wooded hills.

XXIV. SALICACEAE. Willow Family.

Endlicher, *Gen. Pl.* 290 (1840); Benth. and Hook., *Gen. Pl.* III, 411 (1880); Pax, *in Engler and Prantl, Nat. Pflanz.* 3, I, 29 (1887).

Genera: 2; N. temperate zone and a few in tropical regions; according to Pax four distributional centers; (1) Behring straits district; (2) central Europe; (3) Himalayas, (4) Pacific N. America.

Species: 178; 50–60 fossil, extending in the middle Tertiary from N. polar to N. temperate regions.

POPULUS LINN. Gen. 755 (1737).

Benth. and Hook., *Gen. Pl.* III, 412; Durand, *Ind. Gen. Phan.* 381; Engler and Prantl, *Nat. Pflanz.* 3, I, 35 (Pax); Schenck, *Palaeophyt.* 464.

Living species: 18; Europe, Asia (Mid., Mount. and N.); N. America and Mexico. N. America, 10–11; Russian Europe, 9; Canada, 6–7; E. Sts., 5; California, 3-4; S. Sts., 4; Rocky mts., 4; Pl King, 4; Pl. Wheel., 4.

Fossil species: Lower Cretaceous, Potomac region, 3 sp. (*Fontaine*)— *Populophyllum;* Upper Cretaceous, Greenland (*Heer*); N. America (*Lesquereaux*); Tertiary—Greenland, Saghalin, Spitzbergen, Alaska, California, Wyoming, Minn., Europe. 30–40 described, but scarcely so many distinct.

Populus monilifera AIT. Hort. Kew. III, 406 (1789).
P. angulata AIT. Hort. Kew. III, 407 (1789).
P. laevigata AIT. Hort. Kew. III, 406 (1789).

P. angulosa MICHX. Fl. N. Am. II, 243 (1803).
P. canadensis MICHX. f. Hist. Arb. III, 302 (1819).
P. macrophylla LODD. Cab. (1836).

Wats. and Coult., Gray's Man. 6 ed. 487; Britt., Fl. N. J. 227; Mac., Fl. Can. I, 457; Upham, Fl. Minn. 131; Webb., Fl. Neb. 110; Chap., Fl. S. St. 431; Coult., Fl. Colo. 339; Herd., Fl. Eur. Russ. 118; Wats., King. Exp. 327; Roth., Wheel. Exp. 242; Cov., Fl. Ark. 221; Engl. Pax, Nat. Pflanz. III, 1, 35.

Introduced into Russia.

North America: Q., Ont. to Saskatchewan and Assiniboia and Rockies; S. to W. N. Eng., N. J. and Fla.; W. to Colo., Kan., Ind. Terr. and Rocky mts.

Minn. valley: Throughout; woods, shores of lakes and banks of streams.

HERB.: *Taylor 40,* Elysian; *Sheldon 1580,* Lake Benton; *Taylor 632,* Minnesota lake; *Sheldon 449,* Madison Lake, Blue Earth Co.; *Holzinger 261,* Winona Co.; *Oestlund 181,* Hennepin Co.; *Sandberg 520,* Cannon Falls; *Herb. Wickersheim 226,* Lake Park, Becker Co.

Populus balsamifera LINN. Spec. 1034 (1753).

P. tacamahaca MILL. Dict. (1768).
P. balsamifera lanceolata MARSH. Arbust. 108 (1785).
P. candicans AIT. Hort. Kew. III, 406 (1789).
P. viminea BON. Jard. 565 (1845).
P. balsamifera var. *genuina* WESMAEL, DC. Prodr. XVI, 2, 329 (1868).

Wats. and Coult., Gray's Man. 6 ed. 487; Britt., Fl. N. J. 227; Webb., Fl. Neb. 110; Upham, Fl. Minn. 131; Coult., Fl. Colo. 339; Mac., Fl. Can. I, 456; Herd., Fl. Eur. Russ. 118; Wats., King Exp. 327; Roth., Wheel. Exp. 242; Engl. Pax, Nat. Pflanz. III, 1, 35; Hart., Fl. Scand. I, 567, 568; Rothr., Alask. 454.

Introduced in Russia and Scandinavia.

North America: Saskatchewan and Man. to Alaska and Mackenzie; N. in Arctic circle; S. to N. Eng., N. J., Mich., Minn., Neb. and Colo.

Minn. valley: N. W. edge and N. E. district; sparingly represented; borders of streams and swamps.

HERB.: *Bailey 162,* Vermilion lake; *Sandberg 521,* Cannon Falls; *Sandberg 522,* Agate bay.

Populus grandidentata MICHX. Fl. N. Am. II, 243 (1803).

P. grandidentata var. *pendula* TORR. Comp. Fl. N. St. 375 (1824).

Wats. and Coult., Gray's Man. 6 ed. 486; Britt., Fl. N. J. 227; Upham, Fl. Minn. 130; Mac., Fl. Can. 456; Chap., Fl. S. St. 431.

North America: N. S., N. Br., Q., Ont. to N. Car.; W. to N. Minn. and Tenn.

Minn. valley: N. E. and N. W. districts; dry hills, banks of streams and woods.

HERB.: *Oestlund 180*, Hennepin Co.; *Bailey 2a*, Hunter's island.

Populus tremuloides MICHX. Fl. N. Am. II, 243 (1803).

P. trepida WILLD. Spec. IV, 803 (1805).
P. atheniensis HORT. ex Koch, Dendrol. II, 486 (1873).
P. tremuliformis EM. Trees of Mass. 243 (1878).

Wats. and Coult., Gray's Man. 6 ed. 486; Britt., Fl. N. J. 227; Mac., Fl. Can. I, 456; Webb., Fl. Neb. 110; Upham, Fl. Minn. 130; Coult., Fl. Colo. 339; Wats., Fl. Calif. II, 91; Wats., King Exp. 327; Roth., Wheel. Exp. 51, 242.

North America: Newf. and Labrador to Hudson Bay and Alaska; S. to Sacramento valley and N. Mex.; E. to N. Eng., N. Ky., N. J. and Penn.

Minn. valley: Throughout; damp woodland; near lakes and along streams.

HERB.: *Ballard 227n*, Jordan, Scott Co.; *Sheldon 47*, Elysian; *Taylor 481*, Janesville; *Bailey 158*, Vermilion lake; *Sandberg 519*, Cannon Falls; *Herb. Sheld. 1770*, Minneapolis; *Herb. Moyer 225*, Montevideo.

SALIX LINN. Gen. 742 (1737).

Benth. and Hook., *Gen. Pl.* III, 411; Durand, *Ind. Gen. Phan.* 381; Engler and Prantl, *Nat. Pflanz.* 3, I, 36 (Pax); Schenck, *Palaeophyt.* 463.

Living species: 160; all regions except Australia, Malay Archip. and Oceanica. Russia, 70; Europe, 60; N. America, 70; Canada, 60; E. Sts., 20; Rocky mts., 16; California, 23; S. Sts., 7; Pl. King, 7; Pl. Wheel., 9; Russian Europe, 58.

Fossil species: Potomac, lower Cretaceous, 3 sp. (*Fontaine*) *Salicophyllum* —upper Cretaceous, N. America, Asia and Europe; Tertiary, abundant; Europe, Greenland, California; Diluvial, abundant; peat bogs, etc. (*Nathorst, Warming, Steenstrup*), 15–20 sp.

Salix myrtilloides LINN. Spec. 1446 (1753).

S. arbuscula PALL. Fl. Russ. II, 83 (1788).
S. elegans BESS. Enum. 77 (1822).
S. pedicellaris HOOK. Fl. Bor.-Am. II, 150 (1840).

Wats. and Coult., Gray's Man. 6 ed. 485; Britt., Fl. N. J. 227; Upham, Fl. Minn. 130; Mac., Fl. Can. I, 451; Herd., Fl. Eur. Russ. 118; Engl. Pax, Nat. Pflanz. III, 1, 37; Led., Fl. Ross. III, 613; Hart., Fl. Scand. I, 369; Rothr., Alask. 454.

Russia and Siberia.

North America: N. Br. and Atl. coast to Coast range;

N. to Ft. Franklin on Mackenzie and Alaska; Arctic circle in Labrador; S. to N. J., Iowa, Dak.

Minn. valley: Forest, N. W. and W. districts; absent S. W.; peat bogs and marshy meadows around lakes.

HERB.: *Sheldon 238,* Turtle lake, Le Sueur Co.; *Sheldon 325,* Smith's Mills, Blue Earth Co.; *Sheldon 124,* Madison Lake, Blue Earth Co.; *Sheldon 527,* Waseca; *Ballard 445,* Prior's lake, Scott Co.; *Sheldon 1619,* Minneapolis; *Bailey 317,* Vermilion lake; *Leiberg 61,* Blue Earth Co.; *Kassube 220,* Minneapolis; *Sandberg 517,* Chisago Co.; *Sandberg 518,* Chisago lake; *Bailey 137,* Vermilion lake (var. *pedicillaris* Carey).

Salix cordata MUHL. N. Berl. Schr. IV, 236 (1801).

S. rigida MUHL. Willd. Spec. IV, 667 (1805).

Wats. and Coult., Gray's Man. 6 ed. 484; Britt., Fl. N. J. 226; Webb., Fl. Neb. 110 in var.; Mac., Fl. Can. 446; Coult., Fl. Colo. 335; Wats., Fl. Calif. II, 85; Upham, Fl. Minn. 129; Wats., King Exp. 324.

North America: N. Br. to Vancouver and N. W. T.; S. to N. Eng., N. J. and Ga.; W. to Rockies and W. Colo.

Minn. valley: Forest district and probably throughout; low banks and marshes.

HERB.: *Sandberg 509,* Vasa; *Sandberg 510,* Red Wing.

Salix cordata MUHL. var. **angustata** (PURSH) ANDERS. Monog. 159 (1867).

S. angustata PURSH, Fl. Am. 613 (1814).

Wats. and Coult., Gray's Man. 6 ed. 484; Britt., Fl. N. J. 226; Mac., Fl. Can. I, 447; Upham, Fl. Minn. 129.

North America: Ont. to N. Eng. and N. J.; W. to Minn. and Mo.

Minn. valley: Reported from N. edge; infrequent; low banks and marshes.

Salix candida WILLD. Spec. IV, 708 (1805).

S. incana MICHX. Fl N. Am. II, 225 (1803).

S. tomentosa SCHRAD. in Herb.

S. nivea SM. in Herb.

Wats. and Coult, Gray's Man. 6 ed. 484; Britt., Fl. N. J. 225; Mac., Fl Can. I, 446; Upham, Fl. Minn. 128; Coult., Fl. Colo. 337.

North America: Labrador, Anticosti, Q., Ont. to Hudson Bay, Saskatchewan and N. W. T.; S. to N. Eng., N. J., Iowa and Minn.; also, to Mont. and Colo.

Minn. valley: Forest district; especially N. E. district; banks of streams and lakes.

HERB.: *Sheldon 1613,* Ramsey Co.; *Kassube 217,* Minneapolis; *Bailey 392,* Mud lake; *Bailey 360,* Mud river; *Sandberg 506,* Goodhue Co.

Salix petiolaris SM. Linn. Trans. VI, 122 (1802).

S. grisea WILLD. Spec. IV, 699 (1805).
S. fuscata and *rosmarinifolia* PURSH, Fl Am. II, 612 (1814).
S. sericea MUHL. Berl. Mag. IV. 240 (1804).
S. pennsylvanica SAL. Wob. t. 95 (——).
S. grisea var. *subglabrata* KOCH, Comm. 21 (1828).
S. petiolaris var. *gracilis* ANDERS. Sal. Monog. 109 (1867).

Wats. and Coult., Gray's Man. 6 ed. 483; Britt., Fl. N. J. 225; Mac., Fl. Can. I, 453; Upham, Fl. Minn. 129.

North America: N. B., Ont., Man. to Brit. Col.; S. to N. J. and Va.; W. to Minn. and Mont.

Minn. valley: N. E. and S. E. district; banks of streams and low meadows.

HERB.: *Bailey 359,* Mud river. *Sandberg 610,* Goodhue Co.; var. *gracilis* Anders., *Sheldon 1929,* Lake Harriet; *Bailey 143,* Vermilion lake; *Bailey 361,* Mud river.

Salix tristis AIT. Hort. Kew. III, 393 (1789).

S. longirostris MICHX. Fl. N. Am. II, 226 (1803).
S. muhlenbergiana WILLD. Spec. IV, 692 (1805).

Wats. and Coult., Gray's Man. 6 ed. 483; Britt., Fl. N. J. 225; Upham, Fl. Minn. 129; Mac., Fl. Can. I, 455; Chap., Fl. S. St. 430; Webb., Appx. Neb. 27.

North America: N. S. to N. Eng., N. J. and mts. of Ga.; W. to Minn., Neb. and Mo.

Minn. valley: Forest district; infrequent or local; river or lake banks.

HERB.: *? Holzinger 257,* Winona.

Salix humilis MARSH. Arbust. Amer. 140 (1785).

S. conifera WILLD. Pursh, Fl. I, 612 (1814).
S. longirostris MICHX. Fl. N. Am. II, 226 (1803).
S. muhlenbergiana PURSH, Fl. Am. I, 609 (1814).

Wats. and Coult., Gray's Man. 6 ed. 483; Britt., Fl. N. J. 225; Webb.. Fl. Neb. 110; Upham, Fl. Minn. 129; Mac., Fl. Can. I, 449; Chap., Fl. S. St. 430; Mac., Fl. Can. II, 358; Cov., Fl. Ark. 221.

North America: N. S., N. Br., Q. Ont., to Lake Huron region and Man.; S. to N. Eng., N. J. and N. Car.; W. to Minn. and Neb.

Minn. valley: Forest district; dry, sandy places and barrens.

HERB.: *Sheldon 372,* Madison Lake, Blue Earth Co.; *Sheldon 1615,* Minneapolis; *Sandberg 507,* Red Wing; *Bailey 221,* Vermilion lake; *Bailey 408,* Burntside lake; *Bailey 130,* Vermilion lake; *Bailey 286,* Vermilion lake; *Kassube 218,* Minne. apolis.

Salix discolor MUHL. N. Schrift. Ges. Nat. Fr. Berl. IV, 234 (1801).

S. prinoides PURSH, Fl. Am. 613 (1814).

S. sensitiva BARR. Sal. Am. 8 (1840).

Wats. and Coult., Gray's Man. 6 ed. 482; Britt., Fl. N. J. 225; Mac., Fl. Can. I, 447; Chap., Fl. S. St. 430; Upham, Fl. Minn. 129; Cov. Fl. Ark.

North America: N. S., N. Br., Q., Ont. to Man.; S. to N. Eng., N. J. and Car.; W. to Minn. and Mo.

Minn. valley: Throughout; river banks, lake shores and low meadows.

HERB.: *Sheldon 1582,* Lake Benton; *Taylor 724,* Minnesota lake; *Sheldon 242,* Lake Washington, Le Sueur Co.; *Herrick 276,* Minneapolis; *Sandberg 508,* Red Wing.

Salix rostrata RICH. Appx. Frankl. 3 (1823).

S. vagans var. *rostrata* ANDERS. Monog. 8 (1867).

S. livida var. *occidentalis* GRAY, Man. 5 ed. 464 (1867).

Wats. and Coult., Gray's Man. 6 ed. 482; Britt., Fl. N. J. 226; Upham, Fl. Minn. 130; Mac., Fl. Can. I, 453; Coult., Fl. Colo. 337; Roth., Wheel. Exp. 240; Webb., Appx. Neb. 27.

North America: Canada throughout to N. Eng., N. J.; W. to Minn., Mont. and Idaho; S. to Neb..

Minn. valley: Forest district and at least to Pomme des Terres valley; moist and shaded places or drier ground.

HERB.: *Taylor 521,* Mud lake, Waseca Co.; *Sandberg 511,* Red Wing; *Sandberg 512,* Cannon Falls; *Holzinger 258,* Winona; *Bailey 212,* Vermilion lake; *Bailey 284,* Vermilion lake; *Bailey 334,* St. Louis river.

Salix longifolia MUHL. N. Berl. Schr. IV, 238 (1801),

? *S. rubra* RICH. Appx. Frankl. Narr. 37 (1823).

S. fluviatilis NUTT. Sylv. 89 (1842 .

S. longifolia var. *pedicillata* ANDERS. Königl. Sven. Acad. Handl. VI, 55 (1858).

Wats. and Coult , Gray's Man. 6 ed. 482; Britt., Fl. N. J. 227; Upham, Fl. Minn. 130; Mac., Fl. Can. I, 450; Webb., Fl. Neb. 110; Coult., Fl. Colo. 335; Wats., Fl. Calif. II, 84; Herd , Fl. Eur. Russ. 120?; Roth., Wheel. Exp. 240; Wats., King Exp. 324; Cov., Fl. Ark. 221; Engl. Pax, Nat. Pflanz. III, 1, 36.

Russia?

North America: Q., Ont. to Man., Athabasca and N. Brit. Col.; N. to Mackenzie river region; S. to Oregon, Calif., Texas; E. to Md. and Maine.

Minn. valley: Throughout; abundant; river banks and sandy shores.

HERB.: *Sheldon 438,* Buffalo lake, Waseca Co.; *Sheldon 639* Waseca; *Taylor 428,* Buffalo lake, Waseca Co.; *Sheldon 639½,* Wilton, Waseca Co.; *Sheldon 1350*, Verdi, Lincoln Co.; *Sheldon 725*, Sleepy Eye; *Ballard 285*, Jordan, Scott Co.; *Taylor 641*, Minnesota lake; *Taylor 792*, Glenwood; *Sheldon 168*, Madison Lake, Blue Earth Co,; *Sheldon 288*, Lake Washington, Blue Earth Co.; *Sandberg 515*, Red Wing; *Holzinger 259*, Winona; *Leiberg 60*, Blue Earth Co.; *Sandberg 516*, Wyoming.

Salix lucida MUHL. Nov. Act. Soc. Nat. Scrut. Berl. IV, 667 (1801).

S. pentandra NUTT. Sylv. 77 (1842).

Wats. and Coult., Gray's Man. 6 ed. 481; Britt., Fl. N. J. 226; Mac., Fl. Can. I, 450; Webb., Fl. Neb. 110; Upham, Fl. Minn. 130; Engl. Pax, Nat. Pflanz. III, 1, 36.

North America: Canada, east of the Rockies; S. to N. Eng., N. J., Penn.; W. to Neb. and Colo.

Minn. valley: Throughout; banks of streams and shores of lakes.

HERB.: *Taylor 156*, Janesville; *Sheldon 22*, Elysian; *Ballard 216n*, Jordan, Scott Co.; *Herrick 277*, Minneapolis; *Kassube 219*, Minneapolis; *Bailey 358*, Mud river; *Sandberg 513*, Vasa; *Bailey 357*, Mud river (var. *serissima* Bail.).

Salix amygdaloides ANDERS. Königl. Sven. Acad. Handl. VI, 21 (1858).

? *S. melanopsis* NUTT. Sylv. I, 78 (1842).

Wats. and Coult., Gray's Man. 6 ed. 481; Webb., Fl. Neb. 110; Mac., Fl Can. I, 444; Upham, Fl. Minn. 130; Coult., Fl. Colo. 334; Roth., Wheel. Exp. 240.

North America: Red and Saskatchewan valleys to Minn., Mo. and Tenn.; W. to Neb. and Oregon; E. to C. New York.

Minn. valley: Forest district; perhaps throughout; banks of streams and shores of lakes.

HERB.: *Sheldon 1618*, Minneapolis; *Taylor 39*, Elysian.

Salix nigra MARSH. Arbust. Amer. 293 (1785).

S. pentandra WALT. Fl. Car. 243 (1788).
S. caroliniana MICHX. Fl. N. Am. II, 226 (1803).
S. houstoniana PURSH, Fl. Am. 614 (1814).
S. falcata PURSH, Fl. Am. II, 614 (1814).
S. ligustrina MICHX. f. Sylv. II, 212 (1819).
S. nigra var. *falcata* GRAY, Man. 417 (1858).

Wats. and Coult., Gray's Man. 6 ed. 480; Britt., Fl. N. J. 226; Mac., Fl. Can. I, 451; Webb., Fl. Neb. 110; Chap., Fl. S. St. 430; Upham, Fl. Minn. 130; Wats., Fl. Calif. II, 83; Cov., Fl. Ark. 221; Engl. Pax, Nat. Pflanz. III, 1, 36.

North America: N. Br., Q., Ont. to L. Superior region, Man. and N. W. T.; S., W. of Sierra Nevada and Rockies to Gulf of Mexico; E. from Neb. and Ark. to N. Eng., N. J. and Fla.

Minn. valley: Forest district and probably westward; banks of streams and shores of lakes.

HERB.: *Sheldon 477,* Madison Lake, Blue Earth Co.; *Sandberg 514,* Cannon Falls.

XXV. BETULACEAE. Birch Family.

Endlicher, *Gen. Pl.* 272 (1840); Benth. and Hook., *Gen. Pl.* III, 403 (1880)—Trib. I, II, *Cupuliferae;* Lindl., *Veg. King.* 251 (1846)—*Corylaceae;* Baillon, *Hist. Pl.* VI, 217 (1877)—*Castaneaceae* in part; Prantl, *Engler and Prantl, Nat. Pflanz.* 3, I, 39 (1887).

Genera: 6; N. extropical regions; a few to Bengal and the Argentine Republic; from Himalayan and Cordilleran distribution centers. Circumpolar in Tertiary.

Species: 70±, living; 100+, fossil.

CARPINUS LINN. Gen. 729 (1737) p. p. em. Scop. (1760).

Distegocarpus SIEB. and ZUCC. Fam. Nat. Jap. II, 102 (1837).

Baillon, *Hist. Pl.* VI, 255 (*part*); Benth. and Hook., *Gen. Pl.* III, 405; Durand, *Ind. Gen. Phan.* 380; Engler and Prantl, *Nat. Pflanz.* 3, I, 42; Schenck, *Palaeophyt.* 421.

Living species: 12; Middle and S. Europe; C. and E. Asia; Atl. N. America to Mexico. Europe, 2; Russia, 2; Japan, 4 5; N. America, 1.

Fossil species: 25; Tertiary of Greenland, Oregon, Alaska, Spitzbergen, Saghalin, Japan (*Unger, Heer, Göppert,* etc.). Quaternary, Japan and Canada?

Carpinus caroliniana WALT. Fl. Car. 236 (1788).

C. betulus virginiana MARSH. Arbust. 25 (1785).
C. americana LAM. Enc. Meth. IV, 708 (1797).
C. virginiana MICHX. f. Sylv. III, 56 (1813).

Wats. and Coult., Gray's Man. 6 ed. 474; Britt., Fl. N. J. 221; Mac., Fl. Can. I, 439; Chap., Fl So. St. 425; Upham, Fl. Minn. 127; Cov., Fl. Ark. 220; Engl , Nat. Pflanz. III, 1, 43.

North America: N. S.?, Q., Georgian Bay; S. to N. Eng., N. J., Fla.; W. to Minn., Iowa, Kan. and Tex.

Minn. valley: Forest and N.W. districts; along streams and around lakes.

HERB.: *Sheldon 337,* Madison Lake, Blue Earth Co.; *Oestlund 179,* Minnehaha; *Sandberg 502,* Vasa; *Herb. Wickersheim 115,* Lake Park, Becker Co.

OSTRYA SCOP. Fl. Carn. 414 (1760).

Baillon, *Hist. Pl.* VI, 255 (*sub Carpinus*); Benth. and Hook., *Gen. Pl.* III, 406; Durand, *Ind. Gen. Phan.* 381; Engler and Prantl, *Nat. Pflanz.* 3, I, 43 (Prantl); Schenck, *Palaeophyt.* 418.

Living species: 2; S. Europe and the Orient, 1; Japan, N. America and Mexico, 1.

Fossil species: 6 Tertiary, Greenland, Aix, Switzerland, Japan (*Saporta, Heer, Nathorst*); *O. ostrya* (Linn.) in Tertiary of Japan.

Ostrya ostrya (LINN.).

Carpinus ostrya LINN. Spec. 998 (1753) *in part.*
C. virginiana MILL. Dict. (1768).
C. triflora MOENCH, Meth. 394 (1794).
C. ostrya var. *americana* MICHX. Fl. N. Am. II, 202 (1803).
Ostrya virginica WILLD. Spec. IV, 469 (1805).
O. virginiana KOCH, Dendr. II, 2, 8 (1873).

Wats. and Coult., Gray's Man. 6 ed. 474; Mac., Fl. Can. I, 430; Britt., Fl. N. J. 222; Webb., Fl. Neb. 109; Chap., Fl. S. St. 426; Upham, Fl. Minn. 127; Cov., Fl. Ark. 220; Engl. Prantl, Nat. Pflanz. III, 1, 43.

Japan.

North America: Cape Breton, N. S., N. Br., N. Superior region to Man.; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Wyom., Kan., Ark., and S. to Mexico.

Minn. valley: Throughout, principally forest district; rich woods and along streams.

HERB.: *Ballard 293n,* Jordan, Scott Co.; *Taylor 884,* Glenwood; *Ballard 396,* Jordan, Scott Co.; *Holzinger 255,* Winona Bluffs; *Oestlund 178,* Hennepin Co.; *Sandberg 501,* Cannon Falls; *Bailey 232,* Vermilion lake; *Herb. Sheld. 1740,* Minneapolis; *Herb. Moyer 224,* Carlton lake, Chippewa Co.

CORYLUS LINN. Gen. 730 (1737).

Baillon, *Hist Pl.* VI, 255; Benth. and Hook., *Gen. Pl.* III, 406; Durand, *Ind. Gen. Phan.* 381; Engler and Prantl, *Nat. Pflanz.* 3, I, 43: Schenck, *Palaeophyt.* 422.

Living species: 7; Middle and S. Europe, the Orient, Central and E. Asia and N. Amer. Europe, 3; Russia, 1; Russian Europe, 1; N. America, 2; Atl. states, 2; Pac. states, 1; Asia, 4.

Fossil species: 13; Tertiary, N. Greenland, Spitzbergen, Shetland, Africa, Japan, Amurland, Himalayas, China, Saghalin, Grinnell-Land, Alaska, Wyoming, Nebraska (*Heer, Lesquereaux, Nathorst, Unger*, etc.); Quaternary—interglacial, Hanover.

Corylus rostrata AIT. Hort. Kew. III, 364 (1789).

? *C. avellana* LED. Fl. Ross. III, 588 (1851) *in part.*
C. rostrata var. *mandschurica* REGEL, Veg. Amur. 489 (1858).

Wats. and Coult., Gray's Man. 6 ed. 474: Britt., Fl. N. J. 222: Mac., Fl. Can. I, 439; Chap., Fl. S. St. 425; Upham, Fl. Minn. 127; Coult., Fl.

Colo. 333; Wats., Fl. Calif. II, 101; Mac., Fl. Can. II, 355 in var.; Engl. Prantl, Nat. Pflanz. III, 1, 43.

N. Asia; sp. very closely related or identical.

North America: N. S., N. Br., Q., Ont. to Saskatchewan, Brit. Col. and Vancouver; S. to Washington and Colo.; E. to N. Eng., N. J. and Ga.

Minn. valley: Far N. W. district; local and rare; thickets and river banks.

HERB.: *Bailey 229*, Vermilion lake; *Roberts 122*, French river.

Corylus americana WALT. Fl. Car. 236 (1788).

C. humilis WILLD. Berl. Baumz. 108 (1796).

Wats. and Coult., Gray's Man. 6 ed. 474; Britt., Fl. N. J. 222; Mac., Fl. Can. I, 440; Webb., Fl. Neb. 109; Upham, Fl. Minn. 127; Chap., Fl. S. St. 425; Cov., Fl. Ark. 220.

North America: Ont. to Man., Selkirks, Assiniboia and Cypress Hills; S. to N. Eng., N. J. and W. Fla.; W. to Dak., Neb. and Ark.

Minn. valley: Forest district; not infrequent; thickets and edges of woods.

HERB.: *Taylor 378*, Janesville; *Sheldon 507*, Waseca; *Taylor 335*, Janesville; *Sheldon 324*, Smith's Mills, Blue Earth Co.; *Sheldon 467*, Madison Lake, Blue Earth Co.; *Ballard 228*, Jordan, Scott Co.; *Oestlund 176*, Hennepin Co.; *Sandberg 500*, Goodhue Co.; *Oestlund 177*, Minneapolis.

BETULA LINN. Gen. 715 (1735) em. Gaert. (1791).

Betulaster SPACH, Ann. Sci. Nat. 2, XV, 198 (1841).

Baillon, *Hist. Pl.* VI, 254; Benth. and Hook., *Gen. Pl.* III, 404; Durand, *Ind. Gen. Phan.* 380; Engler and Prantl, *Nat. Pflanz.* 3, I, 43 (Prantl); Schenck, *Palaeophyt.* 409.

Living species: 35; boreal and temperate regions of N. hemisphere; Europe; Asia; N. America. 25 (B. and H.); Europe, 12; Russia, 11; N. America, 11; Canada, 9–10; S. Sts., 3; E. Sts., 7; Rocky mts., 2; Pl. King, 4; Pl. Wheel., 2; California, 2.

Fossil species: 40; doubtfully in the Cretaceous; abundant in Tertiary of polar regions and in Europe.

Betula pumila LINN. Mant. I, 124 (1767).

B. grayi REGEL, Bull. Soc. Mosc. XVIII, 406 (1866).

Wats. and Coult., Gray's Man. 6 ed. 472; Britt., Fl. N. J. 221; Mac., Fl. Can. I, 437; Upham, Fl. Minn. 128; Engl. Prantl, Nat. Pflanz. III, 1, 45.

North America: Newf., Labr., Anticosti, N. S., N. Br., Q., Ont. to foot-hills of Rockies; S. to Conn. and N. J.; W. to Ind., Ills. and Minn.

Minn. valley: N. E., N. W. and N. districts; marshy meadows and bogs.

HERB.: *Taylor 737*, Glenwood; *Ballard 145n*, Chaska; *Ballard 423*, New Prague, Scott Co.; *Sandberg 504*, Chisago Co.; *Sandberg 505*, Goodhue Co.; *Herb. Sheld. 1796*, Minneapolis.

Betula nigra LINN. Spec. 982 (1753).

B. lanulosa MICHX. Fl. N. Am. II, 181 (1803).
B. rubra MICHX. Arb. II, 142 (1812).
B. angulata LODD. Cat. (1836).

Wats. and Coult., Gray's Man. 6 ed. 472; Britt., Fl. N. J. 221; Webb., Fl. Neb. 110; Upham, Fl. Minn. 128; Chap., Fl. S. St. 428; Cov., Fl. Ark. 220; Engl. Prantl, Nat. Pflanz. III, 1, 45.

North America: Mass. to N. J. and Fla.; W. to Minn., Neb., E. Kan. and Tex.

Minn. valley: Forest district to Blue Earth Co.; local and infrequent; river banks and lake shores.

HERB.: *Holzinger 256*, Winona Co.

Betula papyrifera MARSH. Arbust. Amer. 19 (1785).

B. papyracea AIT. Hort. Kew. III, 337 (1789).
B. grandis SCHRAD. Ind. Sem. Gött. 2 (1833).
B. canadensis LOUD. Cab. (1836).
B. latifolia TAUSCH, Flora XXI, 751 (1838).

Wats. and Coult., Gray's Man. 6 ed. 472; Mac., Fl. Can. I, 436; Upham, Fl. Minn. 128; Wats., King Exp. 323; Engl. Prantl, Nat. Pflanz. III, 1, 45; Webb., Appx. Neb. 26.

North America: Throughout Canada ("widest range of any Canadian tree"—*Macoun.*) to Arctic ocean; S. to N. Eng., N. Penn., N. Ills. and Minn., Dak. and N. Neb.

Minn. valley: Forest district to Renville Co.; rare and local S. W.; but abundant N. E. districts. Woodland along streams.

HERB.: *Ballard 290n*, Jordan, Scott Co.; *Herrick 275*, Minneapolis; *Sandberg 503*, Red Wing.

ALNUS GAERTN. Fruct. II, 54, t. 90 (1791).

Alnaster SPACH, Ann. Sci. Nat. 2, XV, 200 (1841).
Alnobetula SCHUR. Transsylv. 614 (1866).
Semidopsis ZUMAG. Fl. Ped. I, 249 (1849).
Clethropsis SPACH, Ann. Sci. Nat. 2, XV, 201 (1841).

Baillon, *Hist. Pl.* VI, 254; Benth. and Hook., *Gen. Pl.* III, 404; Durand, *Ind. Gen. Phan.* 380; Engler and Prantl, *Nat. Pflanz.* 3, I, 45 (Prantl); Schenck, *Palaeophyt.* 414.

Living species: 14; Europe; Mid. and N. Asia; N. and S. America, extropical; S. Africa. Europe, 6; Russia, 4; Russian Europe, 3; Rocky mts., 3; E. Sts., 4; S. Sts., 2; Canada, 4–5; California, 4; Pl. King, 3; Pl. Wheel., 2; N. America, excl. Mexico, 8.

Fossil species: 30; Cretaceous; *Alnus* and *Alnites, Alnophyllum,* Nebraska and Colo. (*Lesquereaux*); Tertiary, N. America (*Lesqx.*); Tertiary, polar regions (*Heer*); Europe, (*Saporta, Unger*); Quaternary and recent, Forest-bed of Cromer, etc.

Alnus incana (LINN.) WILLD. Spec. IV, 333 (1805).
Betula incana LINN. f. Suppl. 417 (1781).
Alnus glauca MICHX. Hist. Arb. II, 322 (1812).
A. crispa PURSH, Fl Am. 623 (1814) *partly.*
A. intermedia SCHRAD. Herb. Hort. Gött.
A. incana var. *vulgaris* SPACH, Ann. Sci. Nat. 2, XV, 206 (1841).
A. incana var. *glauca* GRAY, Man. ed. I, 423 (1848).

Wats. and Coult., Gray's Man. 6 ed, 473; Britt., Fl. N. J. 221; Wats., Fl. Calif. II, 81; Coult., Fl. Colo. 332; Webb., Fl. Neb. 109; Upham, Fl. Minn. 128; Miyabe, Fl. Kur. 259, in var.; Herd., Fl. Eur. Russ. 120; Wats., King Exp. 322; Roth., Wheel. Exp. 239; Engl. Prantl, Nat. Pflanz. 3, I, 46; Hart., Scand. Fl. I, 378; Rothr., Alask. 454.

Northern Europe and Asia to Yezo and Saghalin.

North America: Newf. throughout Can. to the Rocky mts.; S to Mass. and N. J.; W. to E. Neb., Minn., Dak. and Colo.; Oregon to Saskatchewan and S. in mts. to Nevada and Mexico; N. to Alaska.

Minn. valley: N. E., and probably N. W. districts; along streams and around marshes.

XXVI. FAGACEAE. Oak Family.

Endlicher, *Gen. Pl.* 274 (1840); Benth. and Hook., *Gen. Pl.* III, 403 (1880)—TribusIII, *Cupuliferae;* Baillon, *Hist. Pl.* VI, 227 (1877), *Castaneaceae in part;* Prantl, Engler and Prantl, *Nat. Pflanz.* 3, I, 47 (1887).

Genera: 4; 3 distributional centers according to Prantl, (1) N. extratropical regions (**Fagus, Castanea** § **Eucastanea, Quercus**); (2) tropical Asia (**Quercus** § **Pasania, Castanea** § **Castanopsis**): (3) Antartic S. America, New Zealand, S. Australia (**Nothofagus**).

Species: 350±, living; 200–225; fossil, Cretaceous, Tertiary and Recent.

Quercus LINN. Gen. 726 (1737).
Cyclobalanus, Cyclobalanopsis, Pasania OERST. Liebm. Chênes. Amer. Trop. 19, 20 (1837?).
Synaedrys LINDL. Introd. ed. 2, 441 (1835).
Lithocarpus BLUME, Fl. Jav. Cupul. 34, t. 20 (1832?).

Baillon, *Hist. Pl.* VI, 256; Benth. and Hook., *Gen. Pl.* III. 407; Durand, *Ind. Gen. Phan.* 381; Engler and Prantl, *Nat. Pflanz.* 3, I, 55 (Prantl); Schenck, *Palaeophyt.* 433.

Living species: 300±; 300 (B. and H.); temperate and tropical regions; especially Europe, tropical and West Asia; N. America; absent from S. America, S. Africa, Australia and Oceanica. Europe. 25; Russia, 10; tropical Asia, 150±; North America and Mexico, 100±; U. S. 50±; E. Sts., 19; S. Sts., 21; Canada, 12–13; California and Pac. U. S., 25; Pl. Wheel., 10; (see *W. Am. Oaks*, Kellogg, Greene and McDonald).

Fossil species: 200± described; Lower Cretaceous, *Quercophyllum*, 2 sp. Potomac beds (*Fontaine*); Upper Cretaceous, Colo., Neb., Kan., Wyoming (*Lesquereaux, Ward, Newberry, Heer*); Tertiary, N. America, Australia, Sumatra, Java, Japan, Greenland, Alaska, Spitzbergen, France, Italy (*Saporta, Heer, Ettinghausen, Brongniart, Göppert, Unger, Nathorst; Lesquereaux*, etc.) Pliocene and Quaternary, Ohio, Italy, Japan (*Newberry, Göppert, Saporta, Nathorst*); Amber, Baltic region (*Conwentz*).

Quercus velutina LAM. Enc. Meth. II, 721 (1789).

Q. discolor AIT. Hort. Kew. III, 358 (1789).
Q. tinctoria BARTR. Trav. 2 ed. 37 (1791).
Q. tinctoria var. *angulosa* MICHX. Fl. N. Am. II, 198 (1803)
Q. tinctoria var. *sinuosa* MICHX. Fl. N. Am. II, 198 (1803).
Q. coccinea var. *tinctoria* GRAY, Man. 5 ed. 454 (1868).

Wats. and Coult., Gray's Man. 6 ed. 477; Britt., Fl. N. J. 244; Mac., Fl. Can. I, 443; Upham, Fl. Minn. 126; Chap., Fl. S. St. 422; Cov., Fl. Ark. 221; Engl. Prantl, Nat. Pflanz. III, 1, 57.

North America: S. Maine, W. Ont. to Minn.; S. to N. J., Ga., Tex.; W. to Kan. and Ark.

Minn. valley: Forest district throughout; woods and hillsides.

HERB.: *Sheldon 475*, Madison Lake, Blue Earth Co.; *Taylor 332*, Janesville; *Ballard 329n*, Belle Plaine; *Sandberg 499*, Red Wing; *Holzinger 254*, Winona Co.

Quercus rubra LINN. Spec. 996 (1753).

Q. ambigua MICHX. Am. Arb. II, 120 (1810).
Q. coccinea var. ? *rubra* SPACH, Veg. II, 165 (1834).
Q. rubra var. *runcinata* A. DC. Prodr. XVI, 2, 60 (1864).

Wats. and Coult., Gray's Man. 6 ed. 477; Britt., Fl. N. J. 224; Webb., Fl. Neb. 109; Upham, Fl. Minn. 127; Chap., Fl. S. St. 422; Mac., Fl. Can. I, 442; II, 356; Cov., Fl. Ark. 221; Engl. Prantl, Nat. Pflanz. III, 1, 56.

North America: Q., Ont. to height of land W. of L. Superior, at L. Namakeen; S. to N. J. and Fla.; W. to Minn., Neb,. Kan., Mo. and Ark.

Minn. valley: S. E. districts; rare or doubtful; river banks and low woods.

Quercus muhlenbergii ENGELM. Trans. Acad. St. Louis, III, 591 (1877).

Wats. and Coult., Gray's Man. 6 ed. 478; Britt., Fl. N. J. 222; Webb., Fl. Neb. 109; Upham, Fl. Minn. 126; Cov., Fl. Ark. 220.

North America: Mass. to Del. and N. J.; S. to N. Alab.; W. to Minn., E. Neb. and Tex.

Minn. valley: Reported from the S. E. district; doubtful; no Minn. specimens seen.

Quercus macrocarpa MICHX. Hist. Chênes. 2, 3 (1801).

Q. olivaeformis MICHX. f. Hist. Arb. II, 32 (1810).
Q. obtusiloba var. *depressa* NUTT. Gen. II, 215 (1818).
Q. alba HOOK. Fl. Bor.-Am. II, 158 (1840) *in part.*
Q. stellata var. *depressa* A. DC. Prodr. XVI, 2, 23 (1864).

North America: N. Br., Q., Ont. to Man. and Assiniboia; S. to Mass. and Penn.; W. to Minn., Dak., Neb., Kan. and Ark.

Minn. valley: Throughout; hillsides, knolls and banks of lakes and streams.

HERB.: *Ballard 408,* Jordan, Scott Co.; *Taylor 470,* Janesville; *Taylor, 692* Minnesota lake; *Sheldon 474,* Madison Lake; *Oestlund 175,* Hennepin Co.; *Sandberg 498,* Red Wing; *Bailey 63,* Vermilion lake; *Bailey 534,* Mud lake; *Herb. Wickersheim 114, 115,* Idlewild, Lincoln Co.; *Herb. Moyer 223,* Montevideo.

Quercus alba LINN. Spec. 996 (1753).

? *Q. sinuata* WALT. Fl. Car. 235 (1788).
Q. alba var. *pinnatifida* MICHX. Hist. Chênes. IV, 5 (1801).
Q. alba var. *repanda* MICHX. Hist. Chênes. IV, 5 (1801).
Q. microcarpa A. DC. Prodr. XVI, 2, 22 (1864)

Wats. and Coult., Gray's Man. 6 ed. 475; Britt., Fl. N. J. 222; Webb., Fl. Neb. 109; Upham, Fl. Minn. 126; Chap., Fl. S. St. 423; Mac., Fl. Can. I, 440; Wats., King Exp. 321; Cov., Fl. Ark. 220; Engl. Prantl, Nat. Pflanz. III, 1, 57.

North America: Q., Ont., Maine to N. J. and Fla.; W. to Dak., Neb., Kan.? and Tex.

Minn. valley: S. E. district; wooded hills and banks.

HERB.: ?*Ballard 485,* Prior's lake, Scott Co.; *Holzinger 253,* Winona Bluffs.

XXVII. ULMACEAE. Elm Family.

Endlicher, *Gen. Pl.* 275 (1840) — *Ulmaceae* and *Celtideae;* Benth. and Hook., *Gen. Pl.* III, 343 (1880)—Trib. I, II, *Urticaceae;* Engler *in Engler and Prantl, Nat. Pflanz* 3, I, 59 (1887).

Genera: 13; tropical and extratropical.
Species: 125±; 50–60 fossil; Eocene to Recent.

ULMUS LINN. Gen. 194 (1737).

Chaetoptelea LIEBM. Vid. Med. Kiob. (1850).
Microptelea SPACH, Am. Sci. Nat. 2, XV, 358 (1841).

Baillon, *Hist. Pl.* VI, 184; Benth. and Hook., *Gen. Pl.* III, 351; Durand, *Ind. Gen. Phan.* 373; Engler and Prantl, *Nat. Pflanz.* 3, I, 62; Schenck, *Palaeophyt*, 470.

Living species: 16; temperate N. hemisphere; mts. in tropical Asia. Europe, 3; Russia, 8; Russian Europe, 7; S. Sts., 5; Rocky mts., 1; E. Sts., 4; Canada, 3; Pl. Wheel., 1; N. America, 6–7.

Fossil species: *Ulmiphyllum*, Lower Cretaceous (*Fontaine*)—Potomac river beds, 3 sp. *Ulmus*, 30–45 sp. described; Eocene, rare; Oligocene abundant—Grinnell-Land, Greenland, Saghalin, Japan, Switzerland, Alaska, Colorado (*Lesquereaux*, *Saporta*, *Heer*, *Unger*, *Watelet*, etc.).

Ulmus racemosa THOMAS, Am. Jour. Sci. Ser. 1, XIX, 170 (1831).

U. americana PLANCH. DC. Prodr. XVII, 155 (1873) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 462; Britt., Fl. N. J. 216; Mac., Fl. Can. 428; Upham, Fl. Minn. 124.

North America: Q., Ont. to S. W. Vt. and N. J.; W. to Minn., Ky. and Mo.

Minn. valley: Forest district to Chippewa valley; infrequent or rare; woods and along streams.

HERB.: *Moyer 220*; Cedar lake, near Montevideo.

Ulmus americana LINN. Spec. 226 (1753).

U. mollifolia MARSH. Arbust. Amer. 156 (1785).
U. americana var. *pendula* AIT. Hort. Kew. I, 320 (1789).
U. pendula WILLD. Berl. Baumz. 519 (1796).
U. alba RAF. Fl. Lud. 115 (1817).
U. americana var. *scabra* SPACH, Ann. Sci. Nat 2 ser. XV, 364 (1841).
U. americana var. *bartramii* WALP. Ann. III, 424 (1846?).
U. floridana CHAP. Fl. S. St. 416 (1860).
U. americana var. *aspera* CHAP. Fl. S. St. 416 (1860).

Wats. and Coult., Gray's Man. 6 ed. 462; Britt., Fl. N. J. 216; Webb., Fl. Neb. 111; Upham, Fl. Minn. 124; Mac., Fl. Can. I. 428; Coult., Fl. Colo. 329; Cov., Fl. Ark. 218; Engl., Nat. Pflanz. III, 1, 62.

North America: Cape Breton, N. S., N. Br., Q., Ont., L. Winnipeg to 52° N. lat. on Saskatchewan and L. Waswanapy, N. W. T.; S. to N. Eng., N. J. and Fla. and W. to Kan., Neb., Dak., Ark. and head waters of Missouri river.

Minn. valley: Throughout; abundant; rich woods and around lakes.

HERB.: *Sheldon 1579*, Lake Benton; *Sheldon 380*, Madison Lake, Blue Earth Co.; *Oestlund 171*, Hennepin Co.; *Sandberg 493*, Goodhue Co.; *Herb. Sheld. 1908*, Minneapolis; *Herb. Moyer 219*, Chippewa river, near Montevideo.

Ulmus fulva MICHX. Fl. N. Am. I, 172 (1803).
U. americana LINN. Herb. Banks.
U. pubescens WALT. Fl. Car. 111 (1788).
U. americana var. *rubra* AIT. Hort. Kew. I, 319 (1789).
U. crispa WILLD. Enum. 295 (1809).
U. rubra MICHX. f. Sylv. III, 138 (1819).

Wats. and Coult., Gray's Man. 6 ed. 462; Britt., Fl. N. J. 216; Mac., Fl. Can. I, 427; Webb., Fl. Neb. 111; Chap., Fl. S. St. 416; Upham, Fl. Minn. 124; Roth., Wheel. Exp. 357; Cov., Fl. Ark. 218; Engl., Nat. Pflanz. III, 1, 62.

North America: Q., Ont., to Georgian bay; S. to N. Eng., N. J. and W. Fla.; W. to Dak., Neb , Kan., Ark.

Minn. valley: Forest district and W. at least to Pomme des Terres valley; along streams and in rich woods.

HERB.: *Taylor 423*, Janesville; *Sheldon 286*, Madison Lake, Blue Earth Co.; *Holzinger 209*, Winona. Co.; *Bailey 237*, Vermilion lake; *Holzinger 210*, Winona Co.; *Herb. Moyer 218*, Montevideo.

CELTIS LINN. Gen. 844 (1737).
Solenostigma ENDL. Prodr. Norf. 41 (1833).
Mertensia H. B. K. Nov. Gen. et. Spec. II, 30 (1817).
Momisia DUM. An. Fam. 17 (1829).

Baillon, *Hist. Pl.* VI, 186; Benth. and Hook., *Gen. Pl.* III, 354; Durand, *Ind. Gen. Phan.* 373; Engler and Prantl, *Nat. Pflanz.* 3, I, 63; Schenck, *Palaeophyt.* 474.

Living species: 50; temperate regions, especially N. and in the tropics. Europe, 2; Russian Europe, 1; Tex. 4–5; Rocky mts., 1; E. Sts., 1; Canada, 1; S. Sts., 1; N. America, 5–6.

Fossil species: 12–15 described; Oligocene, Miocene, Atlantic America, Colorado, Japan, Germany (*Lesquereaux, Saporta, Göppert*).

Celtis occidentalis LINN. Spec. ed. 2, 1478 (1762).
C. obliqua MOENCH, Meth. 344 (1794).
C. crassifolia LAM. Enc. Meth. IV, 138 (1797).
C. pumila PURSH, Fl. 200 (1814).
? *C. canina* RAF. Am. Mo. Mag. (1808?).
C. mississippiensis BOSC. Dict. Ag. n. ed. X, 41 (—).
C. alba DC. Prodr. XVII, 177 (1873).

Wats. and Coult., Gray's Man. 6 ed. 463; Britt., Fl. N. J. 216; Webb., Fl. Neb. 111; Upham, Fl. Minn. 124; Coult., Fl. Colo. 330; Mac., Fl. Can. I, 429; Chap., Fl. S.St. 417; Wats., King Exp. 321; Cov., Fl. Ark. 218; Engl., Nat. Pflanz. III, 1, 64.

Introd. in Europe.

North America: Ont. to L. of Woods; S. to N. J. and Ga.; W. to Minn., Dak., Neb., Ark., Colo.

Minn. valley: Throughout; woodland and along streams or around lakes.

HERB.: *Taylor 298*, Janesville; *Sheldon 1230*, Iberia, Brown Co.; *Sheldon 1416*, Lake Benton; *Ballard 388*, Jordan, Scott Co.; *Sheldon 465*, Madison Lake; *Sheldon 903*, Sleepy Eye.

XXVIII. MORACEAE. Mulberry Family.

Endlicher, *Gen. Pl.* 277, 286 (1840); Benth. and Hook., *Gen. Pl.* III, 343 (1880);—Trib. IV, V, VI, *Urticaceae;* Engler *in Engler and Prantl, Nat. Pflanz.* 3, I, 66 (1888).

Genera: 55 living, 2–3 fossil; temperate and tropical regions; largely developed in tropical America.

Species: 900±; 66 per cent. in the tropical genus *Ficus;* fossil species of *Ficus* from Greenland to S. hemisphere, Cretaceous to Tertiary and Recent; numerous.

MORUS LINN. Gen. 711 (1737).

Baillon, *Hist. Pl.* VI, 190; Benth. and Hook., *Gen. Pl.* III, 364; Durand, *Ind. Gen. Phan.* 375; Engler and Prantl, *Nat. Pflanz.* 3, I, 72 (Engler); Schenck, *Palaeophyt.* 476.

Living species: 10±; temperate N. hemisphere and tropical mts. N. America, 5-6; Russian Europe, 1; Russia, 2; S. Sts., 2; Canada, and E. Sts., 1; Arizona, 1.

Fossil species: 1 sp. in Pliocene of Cantal (*Saporta*).

Morus rubra LINN. Spec. 986 (1753).

M. canadensis LAM. Enc. Meth. IV, 380 (1797).
M. scabra WILLD. Enum. 967 (1809).
M. rubra var. *canadensis* LOUD. Arb. III, 1360 (1838).
M. missouriensis AUDIB. Jard. Ton. (1853).

Wats. and Coult., Gray's Man. 6 ed. 464; Britt., Fl. N. J. 217; Mac., Fl. Can. I, 430; Webb., Fl. Neb. 111; Chap., Fl. S. St. 415; Upham, Fl. Minn. 124; Cov., Fl. Ark. 219; Engl., Nat. Pflanz. III, 1, 73.

North America: Around L. Erie in Can.; W. N. Eng. and N. J. to Fla.; W. to Minn., Dak., Neb., Kan. and to Mexico.

Minn. valley: Reported from S. E. district; rare or local; woods and along streams.

HUMULUS LINN. Gen. 750 (1737).

Lupulus GAERTN. Fruct. I. 358 (1788).

Baillon, *Hist. Pl.* VI, 216; Benth. and Hook., *Gen. Pl* III, 356; Durand, *Ind. Gen. Phan.* 374; Engler and Prantl, *Nat. Pflanz.* 3, I, 96 (Engler). Schenck, *Palaeophyt.* 476.

Living species: 2; N. temperate regions. 1, cosmopolitan; 1, China and Japan.

Fossil species: 2–3; Pliocene, France *(Saporta)*.

Humulus lupulus LINN. Spec. 1457 (1753).

Cannabis lupulus SCOP. Fl. Carn. II, 263 (1772).

Lupulus communis GAERTN. Fruct. 75 (1788).

Humulus americanus NUTT. Journ. Acad. Phil. V, 181 (1840).

Wats. and Coult., Gray's Man. 6 ed. 464; Britt., Fl. N. J. 216; Webb., Fl. Neb. 111; Mac., Fl. Can. I, 429; Upham, Fl. Minn. 125; Chap., Fl. S. St. 414; Coult., Fl. Colo. 331; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 363; Herd., Fl. Eur. Russ. 118; Wats., King Exp. 321; Roth., Wheel. Exp. 239; Cov., Fl. Ark. 219; Engl., Nat. Pflanz. III, 1, 97; Hart., Fl. Scand. I, 345.

North America: N. S., Q., Ont. to Man., 53° N. lat., Brit. Col.; S. to N. Mex. in mts.; E. across cont. to N. Eng. and Ga. Introd. in Atl. states?

Minn. valley: Throughout; climbing on underbrush or trees; banks of streams and edges of woods.

HERB.: *Sheldon 1039*, Sleepy Eye; *Ballard 302n*, Jordan, Scott Co.; *Kassube 216*, Minneapolis; *Sandberg 496*, Red Wing; *Sandberg 497*, Red Wing.

XXIX. URTICACEAE. Nettle Family.

Endlicher, *Gen. Pl.* 282 (1840); Benth. and Hook., *Gen. Pl.* III, 343 (1880)—Tribus VII, *Urticeae;* Engler *in Engler and Prantl, Nat. Pflanz.* 3, I, 98 (1888).

Genera: 41 living; 5 fossil; tropics and sparingly without; to Auckland Island and to 4500 m. in Himalayas and Andes.

Species: 500±; 33 per cent. New World; 33 per cent. Asia; 14 per cent. Africa; 14 per cent. Oceanica; 3–4 per cent. Europe (Engler). Fossil species, 12–15, Cretaceous and Tertiary.

URTICA LINN. Gen. 710 (1737).

Baillon, *Hist. Pl.* III, 517; Benth. and Hook., *Gen. Pl.* III, 381; Durand, *Ind. Gen. Phan.* 377; Engler and Prantl, *Nat. Pflanz.* 3, I, 104 (Engler); Schenck, *Palaeophyt.* 483.

Living species: 30±; temperate regions. Europe, 6; Russia, 5; Russian Europe, 2; N. America, 10±; Canada, 3; E. Sts., 2; Pl. King, 1; Pl. Wheel, 4; California, 4.

Fossil species: Miocene of Steirmack (*Ettinghausen*).

Urtica gracilis AIT. Hort. Kew. I, 341 (1789).

U. dioica MICHX. Fl. N. Am. II, 112 (1803).
U. procera PURSH, Fl. Am. I, 113 (1814).
U. dioica var. *procera* WEDD. DC. Prodr. XVI, 1, 52 (1869).

Wats. and Coult., Gray's Man. 6 ed. 465; Britt., Fl. N. J. 217; Coult., Fl. Colo. 330; Mac.. Fl. Can. I, 430; Webb., Fl. Neb. 111; Upham, Fl. Minn. 124; Chap., Fl. S. St. 412; Wats., King Exp. 321; Roth., Wheel. Exp. 238; Cov., Fl. Ark. 219; Rothr., Alask. 454 ?

North America: N. S. to Saskatchewan and Rockies; N. to Ft. Franklin on Mackenzie; S. to N. Eng., N. J., Ga.; W. to Colo., Neb. and Ark

Minn. valley: Throughout; abundant; banks of streams, edges of fields and moist banks.

HERB.: *Taylor 841,* Glenwood; *Taylor 186,* Janesville; *Taylor 304,* Janesville; *Ballard 361,* Helena, Scott Co.; *Sheldon 362a,* Elysian; *Sheldon 834,* Sleepy Eye; *Kassube 214,* Minneapolis; *Herrick 270,* Minneapolis; *Oestlund 172,* Minneapolis; *Bailey 267,* Vermilion lake; *Herb. Sheld. 1700,* Minneapolis; *Herb. Moyer 221,* Montevideo.

LAPORTEA GAUDICH. Freyc. Voy. Bot. 498 (1826).

Disocarpus LIEBM. K. Dan. Vid. Sel. Schr. 5, II, 308 (1851).
Dendrocnide MIQ. Pl. Jungh. I, 29 (1851).
Sclepsion RAF. MSS. ex Baillon, l. c. (1872).
Urticastrum MOEHR. Hort. Priv. (1736).

Baillon, *Hist. Pl.* III, 519; O. Kuntze, *Rev. Gen.* II, 634; Benth. and Hook., *Gen. Pl.* III, 383; Durand, *Ind. Gen. Phan.* 377; Engler and Prantl, *Nat. Pflanz.* 3, I, 106 (Engler).

Living species: 25; tropical regions and a few in extra-tropical N. America; S. Sts., 1; E. Sts., 1; Canada, 1; Rocky mts., 1; U. S., 1–2.

Laportea canadensis (LINN.) GAUDICH. Uran. 498 (1826).

Urtica canadensis LINN. Spec. 1397 (1753).
U. divaricata PURSH, Fl. Am. 113 (1814).
Sclepsion divaricatum RAF. MSS.
Urtica whitlowi MUHL. Cat. (1818).
Fleurya canadensis B. and H. Fl. Nig. 517 (1849).

Wats. and Coult., Gray's Man. 6 ed. 465; Britt., Fl. N. J. 218; Coult., Fl. Colo. 331; Mac., Fl. Can. 431; Webb., Fl. Neb. 111; Chap., Fl. S. St. 413; Upham, Fl. Minn. 124; Cov., Fl. Ark. 219; Engl., Nat Pflanz. III, 1, 106.

North America: N. S., N. Br., Q., Ont. to Sault Ste. Marie; S. to N. J. and Fla.; W. to Kan., Neb. and Dak.

Minn. valley: Throughout; abundant; damp and rich woodland and shaded river banks.

HERB.: *Sheldon 40,* Elysian; *Sheldon 460,* Madison Lake, Blue Earth Co.; *Sheldon 854,* Sleepy Eye; *Ballard 708,* Waconia; *Taylor 593a,* Minnesota lake; *Taylor 305,* Janesville; *Ballard 292,* Jordan, Scott Co.; *Taylor 811,* Glenwood; *Herrick 271,* Minneapolis; *Kassube 215,* Minneapolis; *Sandberg 494,*Vasa; *Herb. Moyer 222,* Chippewa river bottoms, near Montevideo.

ADICEA RAF. An. Nat. 129 (1815).
Pilea LINDL. Collect t. 4 (1821).
Dubreueilia GAUDICH. Freyc. Voy. Bot. 495 (1826).
Adike RAF. N. Fl. 63 (1836).

Baillon, *Hist. Pl.* III, 524; Benth. and Hook., *Gen. Pl.* III, 384; Durand, *Ind. Gen. Phan.* 377; O. Kuntze, *Rev. Gen.* II, 621; Engler and Prantl, *Nat. Pflanz.* 3, I, 108 (Engler).

Living species: 100+; 160 (B. and H.); 175 (Durand); tropical regions, especially American; wanting in Australia. N. America, temperate regions, 2; Canada and E. Sts., 1.

Adicea pumila (LINN.) RAF. An. Nat. 179 (1815).
Urtica pumila LINN. Spec. 1395 (1753).
U. fasciculata POIR. Enc. Meth. IV, 640 (1797).
Dubrueilia pumila GAUDICH. Uran. 295 (1826).
Adike pumila RAF. N. Fl. 63 (1836).
Pilea pumila GRAY, Man. ed. 1, 437 (1848).

Wats. and Coult., Gray's Man. 6 ed. 466; Britt., Fl. N. J. 218; Mac., Fl. Can. 431; Webb., Fl. Neb. 111; Upham, Fl. Minn. 125; Chap., Fl. S. St. 413; Engl., Nat. Pflanz. III, 1, 108.

North America: N. B., Q., Ont. to Georgian Bay; S. to N. J. and Fla.; W. to Minn., Neb. and Kan.

Minn. valley: Forest district and N W. district; moist woods and shaded banks.

HERB.: *Taylor 1129,* Glenwood; *Herrick 272,* Minnetonka; *Holzinger 211,* Winona; *Sandberg 495,* Goodhue Co.; *Sheldon 1625,* Taylor's Falls.

RAMIUM RUMPF. V. 214 (1747).
Boehmeria JACQ. Stirp. Amer. 246, t. 157 (17—).
Caturus LINN. Suppl. (1767) p. p. ex Kuntze l. c. (1891).
Splitgerbera MIQ. Comm. Phyt. 133 (1838-40).
Duretia GAUDICH. Freyc. Voy. Bot, 500, *adn.* (1826).

Baillon, *Hist. Pl.* III, 526; Benth. and Hook., *Gen. Pl.* III, 387; Durand, *Ind. Gen.* 378; O. Kuntze, *Rev. Gen.* II, 631; Engler and Prantl, *Nat. Pflanz.* 3, I, 111 (Engler).

Living species: 45 ± ; mostly tropical—in N. America and E. Asia, extra-tropical; to Canada and Japan. N. America, 1 sp. in Atlantic region.

Ramium cylindricum (LINN.) OK. Rev. Gen. II, 632 (1891).
Urtica cylindrica LINN. Spec. 1396 (1753).
Boehmeria cylindrica WILLD. Spec. IV, 340 (1805).
B. lateriflora MUHL. Cat. (1813).

Urtica capitata PURSH, Fl. Am. 113 (1814).
Duretia cylindrica GAUDICH. Uran. 499 (1826).
Boehmeria cylindrica var. *B.* HOOK. Fl. Bor.-Am. II (1840).

Wats. and Coult., Gray's Man. 6 ed. 466; Britt., Fl. N. J. 218; Mac., Fl. Can. I, 432; Chap., Fl. S. St. 414; Upham, Fl. Minn. 125; Cov., Fl. Ark. 219; Engl., Nat. Pflanz. III, 1, 111.

North America: N. Eng., Ont. to Minn.; S. to N. J. and Fla.; W. to Dak. and Ark.

Minn. valley: Reported from N. W. district; infrequent or rare; moist woods and shaded river banks.

PARIETARIA LINN. Gen. 771 (1737).
Freiria and **Thaumuria** GAUDICH. Freyc. Voy. Bot. 502 (1826).
Gesnouinia GAUDICH. Freyc. Voy. Bot. 502 (1826).
Helxine REQ. Ann. Sci. Nat. 1, V, 384 (1824).
Soleirolia GAUDICH. l. c. (1826).

Baillon, *Hist. Pl.* III, 534; Benth. and Hook., *Gen. Pl.* III, 392, 393; Durand, *Ind. Gen. Phan.* 378; Engler and Prantl, *Nat. Pflanz.* 3, I, 115, 116 (Engler).

Living species: 9; temperate regions; scarce in tropics; N. America, 2; 1, Atl. region; 1, Pac. region.

Parietaria pensylvanica MUHL. Willd. Spec. IV, 955 (1805).
P. debilis var. *pensylvanica* WEDD. Monog. 516 (1856).

Wats. and Coult., Gray's Man. 6 ed. 466; Britt., Fl. N. J. 418; Mac., Fl. Can. I, 432; Upham, Fl. Minn. 125; Webb., Fl. Neb. 111; Wats., Fl. Calif. II, 65; Chap., Fl. S. St. 413; Coult., Fl. Colo. 331.

North America: Ont. to N. W. T., N. Brit. Col. and Rocky mts.; S. to Colo. and N. E. Nev.; E. across cont. to E. Mass., Vt. and Ga.

Minn. valley: Throughout; local; banks and edges of woods; not infrequent.

HERB.: *Taylor 413*, Buffalo lake, Waseca Co.; *Sheldon 792*, Sleepy Eye; *Ballard 407*, Jordan, Scott Co.; *Holzinger 212*, Winona Co.; *Holzinger 213*, Winona Co.; *Herrick 273*, Minneapolis; *Oestlund 173*, Minneapolis; *Oestlund 174*, Hennepin Co.

XXX. SANTALACEAE. Sandal-wood Family.

Endlicher, *Gen. Pl.* 324, 1378 (1840); Benth. and Hook., *Gen. Pl.* III, 217 (1880) excl. Tribus IV, *Grubbieae;* Hieronymus *in Engler and Prantl, Nat. Pflanz.* 3, I, 202 (1889).

Genera: 26 living; 1 fossil; tropical and temperate regions; distributional centers (1) S. Africa; (2) Malay Archipelago; (3) S. America and Australia; (4) N. temperate region; (Hieronymus).

Species: 250± living; 12–15 fossil; Tertiary.

COMANDRA NUTT. Gen. I, 157 (1818).

Hamiltonia SPRENG. Syst. I, 831 (1825) p. p.

Benth. and Hook., *Gen. Pl.* III, 224; Durand, *Ind. Gen. Phan.* 358; Engler and Prantl, *Nat. Pflanz.* 3, I, 221 (Hieronymus).

Living species: 4; Europe, 1; N. America, 3; Canada, 3; E. Sts., 3; S. Sts. 1; Rocky mts., 2; Pl. King, 1; Pl. Wheel., 2.

Comandra livida RICH. Appx. Frankl. Journ. 9 (1823).

Hamiltonia sarmentosa SPRENG. Syst. I, 831 (1825).

Wats. and Coult., Gray's Man. 6 ed. 451; Mac., Fl. Can. I, 423; Upham, Fl. Minn. 122.

North America: Newf. and Labrador, N. S., N. Br., L. Nipigon, L. Winnipeg to Rocky mts., Brit. Col., 69° N. lat. and Arctic circle; S. to N. Vt., Wisc. and Minn.

Minn. valley: Reported from N. edge; doubtful; dry hillsides or banks.

Comandra umbellata (LINN.) NUTT. Gen. I, 157 (1818).

Thesium umbellatum LINN. Spec. 302 (1753).

T. corymbulosum MICHX. Fl. N. Am. I, 112 (1803).

Hamiltonia umbellata SPRENG. Syst. I, 831 (1825).

Wats. and Coult., Gray's Man. 6 ed. 450; Britt., Fl. N. J. 214; Webb., Fl. Neb. 133; Mac., Fl. Can. I, 423; Chap., Fl. S. St. 396; Coult., Fl. Colo. 324; Wats., King Exp. 319; Roth., Wheel. Exp. 254; Cov., Fl. Ark. 217.

North America: Cape Breton, Q., Ont. to Owen Sound, L. Huron, Saskatchewan (N. of 51° lat.) and Rockies; S. to Washington and Californian Sierras; E. across cont. to N. Eng., N. J. and Ga.

Minn. valley: Forest district and perhaps throughout; dry ground or edges of meadows.

HERB.: *Sheldon 1168*, New Ulm; *Holzinger 202*, Winona, Co.; *Kassube 212*, Minneapolis; *Sandberg 487*, Goodhue Co.; *Holzinger 203*, Stockton; *Herb. Sheld. 1861*, Ramsey Co.; *1718*, Minneapolis.

Comandra pallida A. DC. Prodr. XIV, 636 (1856).

Wats. and Coult., Gray's Man. 6 ed. 450; Webb., Fl. Neb. 133; Mac., Fl. Can. I, 423; Coult., Fl. Colo. 324; Wats., King Exp. 319; Roth., Wheel. Exp. 254 in var.

North America: Saskatchewan and N. W. T. to Brit. Col. and Oregon; S. to Minn., Neb., Kan., N. Mex., and W. to Rocky mts.

Minn. valley: Reported from W. N. W. edge; doubtful or rare; dry shaded hills.

XXXI. ARISTOLOCHIACEAE. Birthwort Family.

Endlicher, *Gen. Pl.* 344 (1840); Benth. and Hook., *Gen. Pl.* III, 121 (1880); Solereder *in Engler and Prantl, Nat. Pflanz.* 3, I, 264 (1889).

Genera: 5; warmer and tropical regions; principally S. America, and absent from Australia. Doubtful remains in Cretaceous and Tertiary.

Species: 200; 90 per cent. in genus *Aristolochia* of the tropical and subtropical regions.

ASARUM LINN. Gen. 385 (1737).

Heterotropa MORR. and DECNE. Ann. Sci. Nat. II, 2, 314 (1834).

Baillon, *Hist. Pl.* IX, 21; Benth. and Hook., *Gen. Pl.* III, 122; Durand, *Ind. Gen. Phan.* 345; Engler and Prantl, *Nat. Pflanz.* 3, I, 271 (Solereder); Schenck, *Palaeophyt.* 707.

Living species: 13; temperate regions, N. hemisphere; Europe, 1; Himalayas, 1; Japan, 7; North America, 4; E. Sts., 3; Canada, 2; S. Sts., 3; California, 3.

Fossil species: Cretaceous of Nebraska and Europe?

Asarum canadense LINN. Spec. ed. 2, 633 (1762).

A. carolinianum WALT. Fl. Car. 143 (1788).
A. latifolium SALISB. Prodr. 344 (1796).
A. villosum MUHL. Cat. (1813).

Wats. and Coult., Gray's Man. 6 ed. 445; Britt., Fl. N. J. 212; Mac., Fl. Can. I, 418; Upham, Fl. Minn. 116; Chap., Fl. S. St. 371; Cov., Fl. Ark. 216; Engl. Solered. Nat. Pflanz. III, 1, 271.

North America: N. Br., Q., Ont. to 49° N. lat. in Man. and Saskatchewan; S. to N. Eng., N. J., N. Car. and W. to Minn. and Dak.

Minn valley: Throughout; shaded river banks and moist woodland.

HERB.: *Sheldon 146,* Madison Lake; *Ballard 52n,* Chaska; *Holzinger 193,* Winona Co.; *Kassube 206,* Minneapolis; *Arthur 159,* Vermilion lake; *Leonard 42,* Minneapolis; *Winchell 19,* Minneapolis; *Sandberg 475,* Goodhue Co.; *Herb. Sheld. 1875,* Ramsey Co.; *Herb. Wickersheim 110,* Idlewild, Lincoln Co.

ARISTOLOCHIA LINN. Gen. 639 (1737).

Glossula RAF. ex. Baillon. l. c. (1888).
Pistolochia RAF. ex. Baillon, l. c. (1888).
? **Endodeca** RAF. ex. Baillon, l. c. (1888).
Howardia and **Einomenia** KLOTZSCH, Monatb. Berl. 607 (1859).
Siphisia RAF. Med. Fl. I, 62 (1828).
Hocquartia DUM. Comm. Bot. 30 (1822).
Holostylis DUCHARTRE. Ann. Sci. Nat. 4, II, 33 (1855).
Guaco LIEBM. Forh. Scand. Nat. 203 (1844).

Baillon, *Hist. Pl.* IX, 22; Benth. and Hook., *Gen. Pl.* III. 123; Durand, *Ind. Gen. Phan.* 345; Engler and Prantl, *Nat. Pflanz.* 3, I, 272 (Solereder): Schenck, *Palaeophyt.* 704–709.

Living species: 180±; tropical and temperate regions. Europe, 13; Russia, 2; S. Sts., 4; E. Sts., 3; Calif., 1. The section which is represented in Asia and N. America contains 14 sps.

Fossil species: 15–20; Cretaceous and Tertiary, Nebraska (*Heer*); Greenland (*Heer*): Europe (*Saporta*); *Aristolochiaephyllum* in Lower Cretaceous, Potomac group (*Fontaine*) 1 sp.

Aristolochia sipho L'HER. Stirp. Nov. Fasc. I, 13 (1784).
A. macrophylla LAM. Enc. Meth. I, 252 (1783).
Siphisia glabra RAF. Med. Fl. I. 65 (1828).
S. sipho KLOTZSCH, Monatsber. 602 (1859).

Wats. and Coult., Gray's Man. 6 ed. 445; Chap., Fl. S. St. 372; Upham, Fl. Minn. 116; Engl. Solered. Nat. Pflanz. III, 1, 272.

North America: Penn. to Minn. and Kan.

Minn. valley: Reported from N. E. district and S. E. edge; rare or local; rich woods and moist river banks.

XXXII. POLYGONACEAE. Buckwheat Family.

Endlicher, *Gen. Pl.* 304 (1840); Benth. and Hook., *Gen. Pl.* III, 89 (1880); Dammer *in Engler and Prantl, Nat. Pflanz.* 3, I *a*, 1 (1891).

Genera: 30; cosmopolitan; arborescent forms principally in tropical America; herbaceous in temperate regions; shrubby in E. Mediterranean and Inland-sea region of Asia, (*Bentham* and *Hooker*). Center of distr. N. temperate zone (*Dammer*).

Species: 650–700 living; 12–15 fossil.

RUMEX LINN. Gen. 300 (1737).
Lapathum MOENCH, Meth. 355 (1794).
Acetosa NECK. Elem. II, 214 (1790).

Benth. and Hook., *Gen. Pl.* III, 100; Durand, *Ind. Gen. Phan.* 342; Engler and Prantl, *Nat. Pflanz.* 3, I *a*, 17 (Dammer).

Living species: 150 described; 100± reduced; cosmopolitan, but largely predominant in N. hemisphere. Europe, 36; Russia, 32; Russian Europe, 20; S. Sts., 9; Rocky mts., 5; California, 12–13; Canada, 8; E. Sts., 7; Pl. King, 8 ?; Pl. Wheel., 3; N. America, 17–20.

Rumex verticillatus LINN. Spec. 334 (1753).

Wats. and Coult., Gray's Man. 6 ed. 438; Upham, Fl. Minn. 120; Mac., Fl. Can. I, 416; Chap., Fl. S. St. 385; Cov., Fl. Ark. 216; Trelease, Rev. Rum. 85.

North America: N. S.?, Q., Ont., N. Eng. to N. J. and Fla.; W. to Minn., Mo. and Tex.

Minn. valley: Forest district; swamps and wet woodland or meadow.

HERB.: *Holzinger 201*, Winona Co.?; *Oestlund 164*, Minneapolis.

Rumex altissimus WOOD, Proc. Am. Acad. 177 (1853).

R. britannica MEISSN. DC. Prodr. XIV, 47 (1852).

Wats. and Coult., Gray's Man. 6 ed. 438; Britt., Fl. N. J. 211; Upham, Fl. Minn. 120; Webb., Fl. Neb. 111; Trelease, Rev. Rum. 86.

North America: N. Y. to N. J.; W. to Minn., Neb. and Kan.; Dak. to Tex.

Minn. valley: Forest district; habitat like that of *R. britannicus* Linn.

HERB.: *Taylor 180*, Janesville; *Sheldon 1067*, Springfield; *Ballard 27*, Chaska.

Rumex britannicus LINN. Spec. 334 (1753).

R. xanthorhizos HOFFM. Nachtr. 239, *ex. Shultes.*

R. orbiculatus GRAY, Man. 5 ed. (1868).

Wats. and Coult., Gray's Man. 6 ed. 438; Britt., Fl. N. J. 211; Mac., Fl. Can. I, 415, II, 354; Upham, Fl. Minn. 120; Wats., King Exp. 314; Webb., Appx. Neb. 27; Engl. Dammer, Nat. Pflanz. 3, I *a*, 18; Trelease, Rev. Rum. 87.

North America: N. Br., Q., Ont. to Kaministiquia river, Owen Sound and 64° N. lat. in N. W. T.; S. to N. Eng., N. J. and Del.; W. to Minn., Dak, and Kan.; S. in Rockies to Nev.; Alaska to Mexico,

Minn. valley: Forest and N. W. district; W. to Chippewa valley or beyond; moist grounds and meadows.

HERB.: *Taylor 1162a*, Glenwood; *Taylor 992*, Glenwood; *Ballard 327*, Belle Plaine; *Roberts 120*, Stewart river; *Bailey 328*, St. Louis river; *Kassube 210*, Minneapolis.

Rumex salicifolius WEINMANN, Flora IV, 28 (1821).

R. verticillatus RICH. Appx. 11 (1823).

Wats. and Coult., Gray's Man. 6 ed. 438; Mac., Fl. Can. I, 416; Webb., Fl. Neb. 112; Upham, Fl. Minn. 120; Coult., Fl. Colo. 317; Wats., Fl. Calif. II, 8; Led., Fl. Ross. III, 504; Trautv., Fl. Sib. 98; Wats., King Exp. 314; Roth., Wheel. Exp. 231; Rothr., Alask. 453; Trelease, Rev. Rum. 87; Greene, Fl. Fran. 139.

Arctic Siberia.

North America: Newf. N. Br., Q. to L. Nipigon, Man., L. Winnipeg, Souris Plain, Great Bear lake, Mackenzie river and Alaska; W. to Rocky mts.; S. to Calif., Colo., Neb., Iowa, Gt. Lake region and N. Eng.

Minn. valley: Throughout; prairie district, saline or alkaline marshes.

HERB.: *Sheldon 1569,* Lake Benton; *Ballard 286,* Jordan, Scott Co.; *Herrick 261,* Minneapolis; *Bailey 1,* Vermilion lake; *Herrick 262,* Minneapolis; *Hammond 36,* Lake City; *Herb. Moyer 216,* Montevideo.

Rumex persicarioides LINN. Spec. 335 (1753).
R. anthoxanthum MURR. Prodr. Gött. 52 (1770).
R. aureus WITH. Arr. 356 (1776).
R. maritimus Auct. Amer.

Wats. and Coult., Gray's Man. 6 ed. 439; Britt., Fl. N. J. 211; Webb., Fl. Neb. 112; Mac., Fl. Can. I, 417; Upham, Fl. Minn. 121; Chap., Fl. S. St. 386; Coult., Fl. Colo. 318; Wats. Fl. Calif. II, 9; Hook., Fl. Gt. Brit. 348; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 110; Wats., King Exp. 314; Cov., Fl. Ark. 216; Led., Fl. Ross. III, 500; Hart., Fl. Scand. I, 338; Trelease, Rev. Rum. 93; Greene, Fl. Fran. 139.

Europe: Scand. and Brit. to Servia and Mid. Russ.

North America: N. Br., Ont., Man., Saskatchewan to Hudson Bay and Rocky mts.; S., E. of Sierras, to N. Mex., and E. to Atl. coast and N. Car.

Minn. valley: Throughout; marshy or alkaline and saline localities.

HERB.: *Sheldon 1252,* Lake Benton; *Sheldon 758,* Sleepy Eye; *Ballard 654,* Chaska; *Ballard 500,* Prior's lake, Scott Co.; *Taylor 653,* Minnesota lake; *Oestlund 165,* Minneapolis; *Kassube, 211,* Minneapolis; *Herrick 263,* Minneapolis; *Leiberg 52,* Blue Earth Co.

POLYGONUM LINN. Gen. ed. V. 445 (1754).
Tephis ADANS. Fam. II, 276 (1763).
Lagunea LOUR. Fl. Cochinch. 220 (1790).
Tovara ADANS. Fam. II, 276 (1763).
Antenoron RAF. Fl. Lud. 28 (1817).
Ampelygonum LINDL. Bot. Reg. (1838).
Echinocaulos HASSK. Flora (1842).
Chylocalyx HASSK. MSS.
Thysanella A. GRAY, Bost. Journ. Nat. Hist. V, 232 (1847).
Bilderdykia DUMORT, Flor. Belg. 18 (1827).
Pleuropterus TURCZ. Bull. Imp. Soc. Mosc. 587 (1848).

Benth. and Hook., *Gen. Pl.* III; Durand, *Ind. Gen. Phan.* 342; Schenck, *Palaeophyt.* 490-491; Engl.-Damm., *Nat. Pflanz.* 3, I *a*, 25.

Living species: 150; cosmopolitan; N. rather than S. Europe, 31; Russia, 31; Russian Europe, 22; S. Sts., 18; Rocky mts., 16; Canada, 29–31; California, 25; E. Sts., 21; Pl. King, 11–12; Pl. Wheel., 11; N. America and Mexico, 50±.

Fossil species: Tertiary, Spitzbergen (*Heer*); Oeningen (*Heer*); Amber (Baltic Sea—*Conwentz.*); Quaternary or Pliocene, Japan (*Nathorst*); 6 or 7 sp. See also *Saporta.*

Polygonum acre HBK. N. Gen. et. Spec. II, 179 (1817).

P. hydropiperoides PURSH, Fl. Am. 270 (1814).
P. hydropiper MICHX. Fl. N. Am. I, 238 (1803).
P. punctatum ELL. Sk. I, 455 (1824).

Wats. and Coult., Gray's Man. 6 ed. 442; Britt., Fl. N. J. 209; Mac., Fl. Can. I, 411; Webb., Fl. Neb. 112; Upham, Fl. Minn. 119; Chap., Fl. S. St. 389; Cov., Fl. Ark. 215; Engl.-Damm., Nat. Pfl. 3, I *a*, 38; Greene, Fl. Fran. 136.

North America: Ont. and N. Eng. to Minn., Dak. and Neb.; S. to Fla., Mo. and Ark.

Minn. valley: N. E. district; wet places, around lakes and pools.

HERB.: *Bailey 370*, Mud river; *Holzinger 197*, Winona Co.

Polygonum hydropiper LINN. Spec. 517 (1753).

P. glandulosum POIR. Enc. Meth. VI, 149 (1804).
P. mite ELL. Sk. I (1821).

Wats. and Coult., Gray's Man. 6 ed. 441; Britt., Fl. N. J. 209; Mac., Fl. Can. I, 411; Webb., Fl. Neb. 112; Upham, Fl. Minn. 119; Coult., Fl. Colo. 320; Led., Fl. Ross. III, 523; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 112; Chap., Suppl. S. St. 645; Roth., Wheel. Exp. 232; Hart., Fl. Scand. I, 333; Engl.-Damm., Nat. Pflanz. 3, I *a*, 28.

All Europe; Arctic Russia to Caucasus, Siberia and Dahuria.

North America: Atl. to Pac. in Can.; S. to Minn., Neb. and Mo.; introd. E. of Mississippi valley; S. to N. Ga.

Minn. valley: Throughout: wet ground; shores of lakes and streams.

HERB.: *Sheldon 1477*, Pipestone City; *Taylor 1153*, Glenwood; *Ballard 604*, Prior lake, Scott Co.; *Ballard 661*, Waconia; *Taylor 828*, Glenwood; *Ballard 722*, Benton, Carver Co.; *Ballard 849*, Patterson lake, Carver Co.; *Roberts 114*, Duluth; *Roberts 115*, Stewart river; *Sandberg 481*, Red Wing.

Polygonum hydropiperoides MICHX. Fl. N. Am. I, 239 (1803).

P. mite PURSH, Fl. Am. 270 (1814).
P. persoonii ENGELM. in Herb. Ledebour.

Wats. and Coult., Gray's Man. 6 ed. 441; Britt., Fl. N. J. 209; Mac., Fl. Can. I, 411; Chap. Fl. S. St. 389; Upham, Fl. Minn. 119; Cov., Fl. Ark. 216; Webb., Appx. Neb. 27; Engl.-Damm., Nat. Pfl. 3, I *a*, 28.

S. America and Australia.

North America: N. Br., Ont., N. Eng. to N. J. and Fla.; W. to Minn., Neb., Mo. and Ark.

Minn. valley: Throughout; wet places, edges of pools and lakes, in the water.

HERB.: *Sheldon 881*, Sleepy Eye; *Herrick 257*, Minneapolis; *Herrick 258*, Minneapolis; *Oestlund 159*, Hennepin Co.; *Oestlund 160*, Hennepin Co.; *Herb. Sheld. 1674*, Minneapolis.

Polygonum hartwrightii GRAY, Proc. Am. Acad. VIII, 294 (1870).

Wats. and Coult., Gray's Man. 6 ed. 441; Britt., Fl. N. J. 209; Webb., Fl. Neb. 112; Mac., Fl. Can. I, 410; Wats., Fl. Calif. II, 14; Upham, Fl. Minn. 119; Coult., Fl. Colo. 320; Greene, Fl. Fran. 136.

North America: Anticosti, Ont. to Hudson Bay and Owen Sound; S. to N. Eng. and N. J.; W. to Minn., Iowa, Neb., Utah, California and Pac. coast.

Minn. valley: Throughout; moist banks and shores and around pools.

HERB.: *Taylor 224*, Janesville; *Sheldon 648*, Waseca; *Sheldon 988*, Sleepy Eye; *Oestlund 161*, Hennepin Co.; *Bailey 417*, Long lake.

Polygonum emersum (MICHX.) BRITT. Cat. N. J. 209 (1890).

P. bistorta WALT. Fl. Car. 131 (1788) *not Linn.*
P. amphibium var. *terrestre* WILLD. Spec. II (1799).
P. amphibium emersum MICHX. Fl. N. Am. I, 240 (1803).
P. coccinneum terrestre MUHL. Cat. 40 (1813).
P. amphibium var. (?) *muhlenbergii* MEISN. Mon. Polyg. (1856).
P. muhlenbergii S. WATS. Proc. Am. Acad. Sci. XIV (1879).
P. terrestre B. S. P. Cat. N. Y. (1888).

Wats. and Coult., Gray's Man. 6 ed. 441; Britt., Fl. N. J. 209; Upham, Fl. Minn. 119; Mac., Fl. Can. I, 410; Wats., Fl. Calif. II, 13; Coult., Fl. Colo. 320; Mac., Fl. Can. II, 353; Roth., Wheel. Exp. 232; Webb., Appx. Neb. 27; Greene, Fl. Fran. 137.

North America: Prairie regions of Can. to Saskatchewan and Brit. Col.; S. to N. Eng., Fla. and Miss.; W. to Washington, Oregon, Calif. and Tex.

Minn. valley: Throughout; wet places; sandy beaches and shores of streams.

HERB.: *Sheldon 1192*, New Ulm; *Sheldon 1396*, Lake Benton; *Taylor 1073*, Glenwood; *Leiberg 56*, Blue Earth Co.; *Herrick 259*, Minneapolis; *Bailey 366*, Mud river; *Sandberg 482*, Red Wing; *Herb. Moyer 214, 215*, Chippewa river, near Montevideo.

Polygonum amphibium LINN. Spec. 361 (1753).

P. purpureum GILIB. Exerc. Phyt. II, 433 (1792).
P. amphibium var. *aquaticum* WILLD. Spec. II, (1799).
P. coccinneum MUHL Cat. 40 (1813).
Persicaria amphibia S. F. GRAY, Arr. II, 268 (1821).

Wats. and Coult., Gray's Man. 6 ed. 440; Britt., Fl. N. J. 209; Mac., Fl. Can. I, 410; Upham, Fl. Minn. 119; Webb., Fl. Neb. 112; Wats., Fl. Calif. II, 13; Coult.. Fl. Colo. 320; Miyabe., Fl. Kur. 257; Led., Fl. Ross. III, 520; Nym., Fl. Eur.; Trautv., Fl. Sib. 100; Hook., Fl. Gt. Brit. 344; Herd., Fl. Eur. Russ. 112; Wats., King Exp. 316; Roth., Wheel. Exp. 232; Cov., Fl. Ark. 215; Hart., Fl. Scand. I, 332; Engl. Damm., Nat. Pflanz. 3, I *a*. 28; Greene, Fl. Fran. 137.

Most Europe to Siberia, Dahuria, China, Japan, Kurile Isls. and Saghalin; W. Himalayas; S. Africa.

North America: Q., Ont. to Brit. Col. and Pac. S., E. of Sierras, to Mexico and E. to Atlantic.

Minn. valley: Forest district and far N. W.; aquatic; floating in quiet waters.

HERB.: *Leonard 43*, Crystal lake.

Polygonum pensylvanicum LINN. Spec. 361 (1753).

P. scabrum MOENCH, Suppl. 267 (1802).

?*P. bicorne* RAF. Fl. Lud. 29 (1817).

Wats. and Coult., Gray's Man. 6 ed. 440; Britt., Fl. N. J. 208; Upham, Fl. Minn. 119; Webb., Fl. Neb. 112; Coult., Fl. Colo. 319; Chap., Fl. S. St. 388; Wats., Fl. Calif. II, 13; Mac., Fl. Can. I, 409.

North America: N. S., N. Br., Q., Ont. to Minn., Dak., Neb., Colo. and Sonora, Calif.; E. to N. Eng. and N. J.; S. to Ga. and Ark.

Minn. valley: Throughout; moist soil, river banks, barren shores of lakes and sloughs.

HERB.: *Sheldon 1047*, Sleepy Eye; *Taylor 829*, Glenwood; *Ballard 613*, Chaska; *Ballard 622*, Chaska; *Ballard 848*, Patterson lake, Carver Co.; *Ballard 803*, Goose lake, Carver Co.; *Ballard 660*, Waconia; *Ballard 879*, Waconia; *Ballard 742*, Waconia; *Ballard 504*, Prior's lake, Scott Co.; *Oestlund 156*, Minneapolis; *Sandberg 480*, Cannon Falls; *Huntington 13*, Rock Co.; *Herb. Sheld. 1675*, Minneapolis; *Herb. Wickersheim* 111, Lake Park, Becker Co.

Polygonum incarnatum ELL. Sk. I, 456 (1821).

P. nodosum var. *incarnatum* GRAY, Man, 3 ed. 372 (1852).

P. lapathifolium var. *incarnatum* WATS. and COULT. Gray's Man. 6 ed. 440 (1890).

Mac., Fl. Can. I, 409; Upham, Fl. Minn. 119; Britt., Fl. N. J. 209; Webb., Fl. Neb. 112; Chap., Fl. S. St. 388; Coult., Fl. Colo. 319; Mac., Fl. Can. II, 353; Led., Fl. Ross. III, 521; Nym., Fl. Eur., *in var.*; Hook., Fl. Gt. Brit. *in var.* 344; Cov., Fl. Ark. 216; Webb., Appx. Neb. 27.

All Europe; N. Russia to Ural Siberia—in vars.

North America: N. S., N. Br., Ont., L. Nipigon to Vancouver; S. to N. J. and S. Car.; W. to Minn., Dak., Neb., Ark., Mo.

Minn. valley: Throughout; wet places; meadows, banks of streams and shores of lakes.

HERB.: *Sheldon 15*, Elysian; *Ballard 784*, Swan lake, Carver Co.; *Oestlund 157*, Minneapolis; *Oestlund 158*, Hennepin Co.; *Winchell 20*, Minneapolis; *Herb. Moyer 213*, Montevideo.

Polygonum tenue MICHX. Fl. N. Am. I, 238 (1803).

P. linifolium MUHL. Cat. 40 (1813).

P. filiforme BART. Comp. Fl. Phil. I, 186 (1818).

Wats. and Coult., Gray's Man. 6 ed. 440; Britt., Fl. N. J. 210; Mac., Fl. Can. I, 408; Upham, Fl. Minn. 120; Webb., Fl. Neb. 112; Chap., Fl. S. St. 390; Coult., Fl. Colo. 319; Wats., Fl. Calif. II, 12; Wats., King. Exp. 315; Roth., Wheel. Exp. 331; Cov., Fl. Ark. 216.

North America: Ont., Saskatchewan, Souris plain, Brit. Col. and Pac. coast; S. in Sierras to Calif., Neb. and Arizona; E. across cont. to N. Eng., and N. Car.

Minn valley: Reported from W. edge and S. W. district; infrequent; knolls and barren bluffs.

Polygonum ramosissimum MICHX. Fl. N. Am. I, 237 (1803).

Wats. and Coult., Gray's Man. 6 ed. 440; Britt., Fl. N. J. 210; Mac., Fl. Can. I, 408; Webb., Fl. Neb. 112; Wats., Fl. Calif. II, 12; Upham, Fl. Minn. 120; Coult., Fl. Colo. 319; Wats., King Exp. 315.

North America: Ont. to L. Winnipeg, Rocky mts. and valley of the Columbia; S. to lower Sierra Nevada; E. across Cont. to Neb., Minn., Mo., N. Eng. and N. J.

Minn. valley: Prairie district. throughout; dry or sandy waste places.

HERB.: *Taglor 1147*, Glenwood; *Sheldon 1499*, Lake Benton; *Oestlund 162*, Minneapolis; *Holzinger 199*, Winona Co.; *Sandberg 483*, Red Wing; *Holzinger 200*, Winona.

Polygonum erectum LINN. Spec. 361 (1753).

P. aviculare var. *erectum* GRAY, Man. 4 ed. 417 (1867).

Wats. and Coult., Gray's Man. 6 ed. 440; Britt., Fl. N. J. 210; Mac., Fl. Can. I, 407; Upham, Fl. Minn. 120; Webb., Fl. Neb. 112; Coult., Fl. Colo. 318; Chap., Fl. S. St. 390; Wats., Fl. Calif. II, 11; Led., Fl. Ross. III, 532; Roth., Wheel. Exp. 231; Cov. Fl. Ark. 215

All Russia.

North America: Ont. to Rocky mts.; S. and W. to Oregon, Nev. and Calif.; E. through Colo. and Neb. to N. Eng., N. J. and Ga.

Minn. valley: Forest district and doubtless throughout; shaded banks or woodland districts.

HERB.: *Sheldon 1729*, Minneapolis.

Polygonum aviculare LINN. Spec 362 (1753).

P. centinodium LAM. Fl. Fr. III, 237 (1793).
P. geniculatum POIR. Enc. Meth. VI, 147 (1804).
P. provinciale KOCH, Linn. XXII, 204 (1848).

Wats. and Coult., Gray's Man. 6 ed. 439; Britt., Fl. N. J. 210; Upham, Fl. Minn. 119; Mac., Fl Can. I, 407; Webb., Fl. Neb. 112; Coult., Fl. Colo. 318; Chap., Fl. S. St. 390; Brew. and Wats., Fl. Calif. II, 11; Miyabe., Fl. Kur. 257; Led., Fl. Ross. III, 531; Nym., Fl. Eur.; Trautv. Fl. Sib. 101; Hook., Fl. Gt. Brit. 346; Herd., Fl. Eur. Russ. 112; Roth., Wheel. Exp. 5, 230, 373; Wats., King Exp. 315; Cov., Fl. Ark. 215; Hart, Fl. Scand. I, 333; Engl. Damm. Nat. Pflanz. 3, I, *a*, 29; Rothr., Alask. 453; Greene, Fl. Fran. 133.

All Europe; all Russia and Siberia to Japan and Kurile Isls.

North America: Greenland to Alaska and S. to Calif. and Ga ; indigenous west of the Mississippi.

Minn. valley: Throughout; door yards, roadsides, fields and banks.

HERB.: *Sheldon 1558*, Lake Benton; *Sheldon 1011*, Sleepy Eye; *Ballard 524*, Cleary's lake, Scott Co.; *Sandberg 482*, Red Wing; *Roberts 116*, Grand Marais; *Kassube 208*, Minneapolis; *Holzinger 198*, Winona Co.; *Herb. Sheld. 1670*, Minneapolis; *Herb. Wickersheim 112*, Idlewild, Lincoln Co.

Polygonum virginianum LINN. Spec. 360 (1753).

P. muticum MOENCH, Suppl. 266 (1802).
Persicaria virginiana GAERTN. Fruct. II, 180 (1791).
? *Antenoron racemosum* RAF. Fl. Lud. 28 (1817).

Wats. and Coult., Gray's Man. 6 ed. 442; Britt., Fl. N. J. 209; Webb., Fl. Neb. 112; Mac., Fl. Can. I, 413; Upham, Fl. Minn. 119; Chap., Fl. S. St. 390; Cov., Fl. Ark. 216; Engl.-Damm., Nat. Pfl. 3, I *a*, 28.

North America: N. S. to Ont.; S. to Fla.; W. to Minn., Neb., Ark. and Mo.

Minn. valley: S. central district; thickets and moist woodland.

HERB.: *Sheldon 298*, Madison Lake, Blue Earth Co.

Polygonum articulatum LINN. Spec. 361 (1753).

Polygonella articulata MEISN. Gen. II, 228 (1843).

Wats. and Coult., Gray's Man. 6 ed. 443; Britt., Fl. N. J. 210; Upham, Fl. Minn. 119; Mac., Fl. Can. 409; Cov., Fl. Ark. 215.

North America: Sault Ste. Marie and N. Superior region to Saskatchewan; S. to Maine, N. J. and Minn.; S. to Mo. and Ark.

Minn. valley: Reported from S. central district; infrequent or local; dry and sandy soil.

Polygonum scandens LINN. Spec. 363 (1753).

P. dumetorum var. *scandens* GRAY, Man. 5 ed. 418 (1868).

Wats. and Coult., Gray's Man. 6 ed. 443; Britt., Fl. N. J. 210; Mac., Fl. Can. I, 413; Webb., Fl. Neb. 112; Chap., Fl. S. St. 391; Upham, Fl. Minn. 120; Wats., Fl. Calif. II, 15; Coult., Fl. Colo. 321; Led., Fl. Ross. III, 528; Nym., Fl. Eur.; Hook., Fl. Gt. Brit.; Herd., Fl. Eur. Russ. 112; Cov., Fl. Ark. 215.

Europe, Asia and India—with *P dumetorum* Linn.

North America: N. S., N. Br., Q., Ont.; N. Superior region to N. W. T.; S. to Washington and Montana to Colo.; E. to N. Eng., N. J., Fla. and Miss.

Minn. valley: Throughout; moist thickets and edges of woods or along shaded banks.

HERB.: *Taylor 1163*, Glenwood; *Sheldon 1563*, Lake Benton; *Sheldon 427*, Ash lake, Blue Earth Co.; *Ballard 506*, Prior's lake, Scott Co.; *Ballard 630*, Chaska; *Leiberg 57*, Blue Earth Co.; *Bailey 51*, Vermilion lake; *Herb. Sheld. 1793*, Minneapolis.

Polygonum cilinode MICHX. Fl. N. Am. I, 241 (1803).

Wats. and Coult., Gray's Man. 6 ed. 442; Britt., Fl. N. J. 210; Mac., Fl. Can. I, 413; Chap., Fl. S. St. 391; Upham, Fl. Minn. 120.

North America: N. S., N. Br., Q., Ont., Hudson Bay and Peace river valley to N. Eng., N. J., N. Car., and W. to Mich. and Minn.

Minn. valley: N. E. district and N. edge; rare or local; rocky hills and banks.

HERB.: *Roberts 118*, Grand Marais; *Roberts 119*, Duluth; *Sandberg 484*, Vermilion lake.

Polygonum arifolium LINN. Spec. 362 (1753).

Wats. and Coult., Gray's Man. 6 ed. 442; Britt., Fl. N. J. 210; Mac., Fl. Can. I, 413; Chap., Fl. S. St. 390; Upham, Fl. Minn. 120; Engl.-Damm., Nat. Pflanz. 3, I *a*, 28.

Asia?

North America: N. S., N. Br., Q., Ont.; S. to N. Eng., N. J. and S. Car.; W. to Minn. and Mo.

Minn. valley: Forest district; Blue Earth Co.; rare; low, wet woodland.

HERB.: *Boden 2*, Chisago Co.

Polygonum sagittatum LINN. Spec. 363 (1753).

P. sagittatum var. *boreale* MEISN. Mon. Polyg. 65 (1826).

Wats. and Coult., Gray's Man. 6 ed. 442; Britt., Fl. N. J. 210; Upham, Fl. Minn. 120: Mac., Fl. Can. I, 413; Webb., Fl. Neb. 112; Chap., Fl. S. St. 390; Led., Fl. Ross. III, 529; Cov., Fl. Ark. 216; Engl.-Damm., Nat. Pflanz. 3, I *a*, 28.

Asia; Siberia—Baikal and Transbaikal.

North America: Newf., N. S., N. Br., Q., Ont. to Saskatchewan and Minn.; S. to Fla., Ark., Kan., Neb. and Dak.

Minn. valley: Forest district to Cottonwood valley; infrequent W.; abundant E.; low places and thickets.

Herb.: *Sheldon 209*, Lake Washington, Blue Earth Co.; *Ballard 657*, Waconia; *Sheldon 209a*, Madison Lake, Blue Earth Co.; *Ballard 498*, Prior's lake, Scott Co.; *Ballard 538*, Cleary's lake, Scott Co.; *Ballard 723*, Benton, Carver Co.; *Roberts 117*, Stewart river; *Kassube 209*, Minneapolis; *Herrick 260*, Minneapolis; *Oestlund 163*, Minneapolis.

XXXIII. CHENOPODIACEAE. Goosefoot Family.

Endlicher, *Gen. Pl.* 292 (1840); Benth. and Hook., *Gen. Pl.* III, 43 (1880); Moquin-Tandon, *DC. Prodr.* xiii, II, 41 (1849)—*Salsolaceae;* Volkens *in Engler and Prantl*, *Nat. Pflanz.* 3, I *a*, 36 (1892).

Genera: 80; cosmopolitan; many of them composed of halophytes or xerophytes; few in tropics or polar regions.

Species: 550±; many widely distributed.

CHENOPODIUM Linn. Gen. 191 (1737).

Oligandra Less. Linn. IX, 199 (1835).
Lipandra Moq. Chen. En. 19 (1840).
Gandriloa Steud. Nom. ed. 2 (1841).
Oliganthera Endl. Gen. Suppl. I, 1377 (1843).
Ambrina Spach, Suit. Buff. V, 295 (1836).
Botrydium Spach, Suit. Buff. V, 298 (1836).
Teloxys Moq. Ann. Sci. Nat. 2, I, 129 (1834).
Blitum Linn. Gen. 14 (1737).
Morocarpus Moench, Meth. 342 (1794).
Oxybasis Kar. and Kir. Bull. Imp. Soc. Mosc. 738 (1841).
Agathophyton Moq. Ann. Sci. Nat. 2, I, 191 (1834).
Orthosporum Nees, Gen. Germ. Monochl. n 58 (1835).

Baillon, *Hist. Pl.* IX, 166; Benth. and Hook., *Gen. Pl.* III, 51; Durand, *Ind. Gen. Phan.* 336; Schenck, *Palaeophyt.* 491.

Living species: 50; cosmopolitan; Europe, 13; Russia, 15; Russian Europe, 12; California, 11–13; E. Sts., 5; Canada, 5; Rocky mts., 8; S. Sts., 2; Pl. King, 4; Pl. Wheel., 6; interior regions, 8–9.

Chenopodium rubrum Linn. Spec. 219 (1753).

Blitum maritimum Nutt. Gen. Add. (1818).
B. rubrum Reichb. Fl. Germ. Exc. 582 (1832).
B. polymorphum C. A. Mey. Fl. Alt. I, 13 (1829).

Wats. and Coult., Gray's Man. 6 ed. 432; Mac., Fl. Can. I, 400; Britt., Fl. N. J. 207; Upham, Fl. Minn. 117 and Suppl. Minn. 86; Coult., Fl. Colo.

308; Wats., King Exp. 288; Wats., Fl. Calif. II, 48; Hook., Fl. Gt. Brit 338.

Europe.

North America: Newf. to Assiniboia and Brit. Col.; S. to N. J. and W. to Minn., Colo. and Calif.

Minn. valley: S. W. and W. district; low or dry ground; saline localities.

HERB.: *Sheldon 1361,* Lake Benton; *Sheldon 1057,* Sleepy Eye lake.

Chenopodium boscianum MOQ. Chen. Enum. 21 (1840).

C. album BOSC. in Herb. Ventenat.

Wats. and Coult., Gray's Man. 6 ed. 431; Britt., Fl. N. J. 206; Upham, Fl. Minn. 117; Chap., Fl. S. St. 376; Cov., Fl. Ark. 215; Webb., Appx. Neb. 28.

North America: N. Y. and N. J. to S. Car.; W. to Minn., Neb., Ark. and Tex

Minn. valley: Blue Earth Co. and Lincoln Co.; prairie district S. and S. W.; sandy or gravelly places.

HERB.: *Sheldon 1555,* Lake Benton.

Chenopodium capitatum (LINN.) B. and H. Gen. l. c. (1880).

Blitum capitatum LINN. Spec. 6 (1753).

Morocarpus capitatus MOENCH, Meth. 342 (1794).

Blitum virgatum var. *capitatum* COSS. Germ. and Wedd. Pl. Par. 108 (1845).

Wats. and Coult., Gray's Man. 6 ed. 432; Britt., Fl. N. J. 207; Wats., Fl. Calif. II, 48; Mac., Fl. Can. I, 400; Upham, Fl. Minn. 117; Coult., Fl. Colo. 308; Nym., Fl. Eur.

Central Europe; Siberia.

North America: Atl. to Pac. in Can.; N. to Slave lake and Alaska; S. to Washington, Utah, New Mex., Minn., Neb. and Tex.; introd. in E. U. S.

Minn. valley: Reported from N. edge; infrequent; dry or waste places.

HERB.: *Holzinger 195,* Winona Co.; *Roberts 110,* Minnesota Point; *Roberts 111,* Duluth.

CORISPERMUM LINN. Gen. ed. V, 12 (1754).

Baillon, *Hist. Pl.* IX, 175; Benth. and Hook., *Gen. Pl.* III, 57; Durand, *Ind Gen. Phan.* 337.

Living species: 5–6 (Baillon); 8–10 (Durand); Described, 15; S. Europe, C. and W. Asia to China; N. America. Russian Europe, 6; N. America, 1.

Corispermum hyssopifolium LINN. Spec. 6 (1753).

C. squarrosum VAHL, Enum. I, 16 (1804).

C. patens FISCH. in R. and S. Syst. I, 579 (1820).

Wats. and Coult., Gray's Man. 6 ed. 434; Wats., Fl. Calif. II, 57; Upham, Fl. Minn. 117; Webb., Fl. Neb. 113; Coult., Fl. Colo. 311; Mac., Fl. Can. I, 403; II, 352; Forbes and Hems., Fl. Sin. 326; Herd., Fl. Eur. Ross. 108; Wats., King Exp. 293; Roth., Wheel. Exp. 238; Cov., Fl. Ark. 215; Led., Fl. Ross III, 759; Rothr., Alask. 455.

S. Europe to Caucasus, N. W. India, Manchuria and China.

North America: Ont. and Gt. Lake region to Red, Saskatchewan and Athabasca valleys; Gt. Slave lake, N. W. T., Alaska to Pt. Barrow; S. to Minn., Neb., Ark., Colo.; Rockies from Brit. Col. to Sierras and Mexico; E. to Ills.

Minn. valley: N. E. and N. W. districts; local and infrequent; sandy beaches of lakes and along streams.

HERB.: *Taylor 1187*, Glenwood; *Roberts 113*, Minnesota Point.

SALSOLA LINN. Gen. 193 (1737).
Caroxylon THUNB. Pl. Nov. Gen. II, 37 (1782).
Halothamnus JAUB. and SPACH, Ill. Or. t. 136 (1844).

Benth. and Hook., *Gen. Pl.* III, 71; Baillon, *Hist. Pl.* IX, 186; Durand, *Ind. Gen. Phan.* 338.

Living species: 40±; temperate and subtropical regions. N. America, 1, Atl. states.

Salsola kali LINN. Spec. 222 (1753).
S. caroliniana WALT. Fl. Car. (1788).
S. carolina MICHX. Fl. Am. I, 174 (1803).
S. kali var. *caroliniana* NUTT. Gen. I, 199 (1818).

Wats. and Coult., Gray's Man. 6 ed. 435; Mac., Fl. Can. I, 405; Britt., Fl. N. J. 208; Webb., Fl. Neb. 113; Herd., Fl. Eur. Russ. 110; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 343.

Cosmopolitan species.

North America: N. S. and N. Br. to N. Eng. and Va.; W. to Minn. and Neb.

Minn. valley: W. and N. W. districts; saline or alkaline places; commonly confounded with *Corispermum*.

HERB.: *Sheldon 1196*, New Ulm; *Taylor 1180*, Glenwood.

XXXIV. AMARANTACEAE. Amaranth Family.

Endlicher, *Gen. Pl.* 300 (1840); Benth. and Hook., *Gen. Pl.* III, 20 (1880).

Genera: 50; temperate and warmer regions.
Species: 500; many cosmopolitan.

ACNIDE LINN. Gen. ed. V, 987 (1754).
Montelia A. GRAY, Man. ed. 2, 369 (1852).

Baillon, *Hist. Pl.* IX, 200 (sub *Amarantus*); Benth. and Hook., *Gen. Pl.* III, 29; Durand, *Ind. Gen. Phan.* 334.

Living species: 4–5; N. America to Trinidad. S. Sts., 4; E. Sts., 3; Rocky mts., 1; Canada, 2.

Acnide tamariscina (NUTT.) WOOD, Bot. 289 (1874).

Amarantus tamariscinus NUTT. Trans. Am. Phil. Soc. V, 165 (1837).

Acnida tuberculata, *rusocarpa* and *cannabina* var. *concatenata* MOQ.-TAND. DC. Prodr. xiii, II, 277, 278 (1849).

Montelia tamariscina var. *concatenata* GRAY, Man. ed. IV, 413 (1858).

Wats. and Coult., Gray's Man. 6 ed. 429; Upham, Fl. Minn. 118; Mac., Fl. Can. I, 397; Webb., Fl. Neb. 114; Coult., Fl. Colo. 305; Cov., Fl. Ark. 214.

North America: Ont. to Ohio, Alabama and La.; W. to Minn., Dak., Neb., Ark. and Mo.

Minn. valley: S. central and S. E. districts; gravelly or sandy shores.

HERB.: *Sandberg 478*, Red Wing; *Holzinger* 196, Winona.

FROELICHIA MOENCH, Meth. 50 (1794).

Oplotheca NUTT. Gen. II, 78 (1818).

Hoplotheca SPRENG. Syst. Cur. Post. 52 (1827).

Baillon, *Hist. Pl.* IX, 212; Benth. and Hook., *Gen. Pl.* III, 41; Durand, *Ind. Gen. Phan.* 335.

Living species: 10; America, warmer regions; Minn. to Brazil. S. Sts., 1; Rocky mts., 1; E. Sts., 2; Pl. Wheel., 1; N. Amer. excl. Mex., 4.

Froelichia floridana (NUTT.) MOQ. DC. Prodr. XIII, 2, 420 (1849).

Oplotheca floridana NUTT. Gen. II, 78 (1818).

Gomphrema floridana SPRENG. Syst. I, 824 (1825).

Wats. and Coult., Gray's Man. 6 ed. 430; Coult., Fl. Colo. 305; Upham, Fl. Minn. 118; Webb., Fl. Neb. 114; Chap., Fl. S. St. 384; Roth., Wheel. Exp. 234; Cov., Fl. Ark. 214.

North America: S. Minn. to Colo., Neb., Ark., Tex., Fla., Ga., Ills. and Wisc.

Minn. valley: Reported from N. E. district; infrequent; dry places.

HERB.: *Sandberg 479*, Goodhue Co.

AMARANTHUS LINN. Gen. 716 (1737).

Amblogyne RAF. Fl. Tell. 42 (1836).

Roemeria MOENCH, Meth. 351 (1794).

Sarratia MOQ.-TAND. DC. Prodr. xiii, II, 255 (1849).

Glomeraria COV. Leccion, 319 (1802).

Pyxidium MOENCH, Meth. 358 (1794).

Euxolus RAF. Fl. Tell. 42 (1836).
Pentreas RAF. l. c. (1836).
Albersia KUNTH, Fl. Berol. ed. 2, 144 (1838).
Mengea SCHAUER, Pl. Meyen 405 (1842?).
Scleropus SCHRAD. Ind. Gött. (1835).

Baillon, *Hist. Pl.* IX, 200, part; Benth. and Hook., *Gen. Pl.* III, 28; Durand, *Ind. Gen. Phan.* 333.

Living species: 50±; all warmer and tropical regions. Europe, 8; Russia, 8; Russian Europe, 7; North America, 15; S. Sts., 4; E. Sts., 3; Rocky mts., 5; California, 9; Pl. Wheel., 6; Pl. King, 3; Canada, 5—introduced.

Amaranthus blitoides S. WATS. Proc. Am. Acad. XII, 273 (1878).

Wats. and Coult., Gray's Man. 6 ed. 428; Webb., Fl. Neb. 114; Mac , Fl. Can. I, 397; Coult., Fl. Colo. 305; Wats., Fl. Calif. II, 41; Upham, Fl. Minn. 118; Greene, Fl. Fran. 163.

North America: Mex. to N. Nev., Iowa and Minn.; naturalized in Ont. and on Pac. coast.

Minn. valley: W. districts and E. to Mankato; roadsides and waste places.

HERB.: *Sheldon 1541*, Lake Benton; *Taylor 877*, Glenwood.

XXXV. PHYTOLACCACEAE. Pokeweed Family.

Endlicher, *Gen. Pl.* 310 (1840); Benth. and Hook., *Gen. Pl.* I, 858 (1865); III, 78 (1880); Heimerl, Engler and Prantl, *Nat. Pflanz.* 3, I *b*, 1 (1889).

Genera: 23; tropical and warmer regions. 50 per cent. tropical American.

Species: 85±; principally in the tropics.

PHYTOLACCA LINN. Gen. 384 (1737).

Phytolaca and **Sarcoca** RAF. Fl. Tell. 627 (1836).
Pircunia MOQ. DC. Prodr. XIII, II, 29 (1849).

Baillon, *Hist. Pl.* IV, 50; Benth. and Hook., *Gen. Pl.* III, 84; Durand, *Ind. Gen. Phan.* 340; Engler and Prantl, *Nat. Pflanz.* 3, I *b*, 10 (Heimerl).

Living species: 11; widely distributed, but absent from Australia. America, 6; Old World, 5; U. S., 1; Europe and Russia, 1.

Phytolacca decandra LINN. Spec. 631 (1753).

Wats. and Coult., Gray's Man. 6 ed. 436; Britt., Fl. N J. 208; Upham, Fl. Minn. 116; Chap., Fl. S. St. 375; Webb., Fl. Neb. 114; Nym., Fl. Eur.; Mac., Fl. Can. I, 405; Cov., Fl. Ark. 215; Engl. Heimerl, Nat. Pflanz. III, 1, 8–10.

S. Europe; China?

North America: Ont. and N. Eng. to Minn.; S. to Fla.; W. to Dak.? Neb. and Ark.

Minn. valley: Forest district to Blue Earth Co.; infrequent; low grounds.

HERB.: *Taylor 552*, Janesville.

XXXVI. NYCTAGINACEAE. Four-o'Clock Family.

Endlicher, *Gen. Pl.* 310 (1840); Benth. and Hook., *Gen. Pl.* III, 1 (1880); Heimerl, *in Engler and Prantl, Nat. Pflanz.* 3, I *b*, 14 (1889).

Genera: 15–16; tropical and warmer regions; principally America; rare in Australia and almost wanting in Africa.

Species: 160±; principally in tropical America.

MIRABILIS LINN. Gen. 139 (1737).

Admirabilis CLUS. Hist. II. 87 (1601).
Nyctago JUSS. Gen. 90 (1789).
Jalapa MOENCH, Meth. 508 (1794).
Quamoclidion CHOIS. Prodr. 429 *n.* 2 (1849?).
Acleisanthes A. GRAY, Brief. Char. Am. Jour. Sci. (II) XV, (——).
? **Nyctaginea** CHOIS. Mem. Gen. XII (1839).
Pentacophrys A. GRAY, Brief. Char. Am. Jour. Sci. (II) XV, (——).
Oxybaphus L'HER. ex Vahl. Enum. II, 39 (1806).
Allionia LOEFFL. It. 181 (1758).
Calyxhymenia ORTEG. Dec. 5, t. 1 (1800).
Calymenia PERS. Syn. I, 36 (1805).
Vitmannia TURRA, ex Cav. Ic. III, add. (1794).
Palavia and **Bruguiera** CAV. l. c. (1794).

Baillon, *Hist. Pl.* IV, 18, 19; Benth. and Hook., *Gen. Pl.* III, 3, 4; Durand, *Ind. Gen. Phan.* 331; Engler and Prantl, *Nat. Pflanz.* 3, I *b*, 24, 25; (Heimerl); Schenck, *Palaeophyt.* 491.

Living species: 30; mostly W. and S. W. N. America, Central America and Chile; 14–15, N. America and Mexico. E. Sts., Canada, and S. Sts., 3; 1 sp. in Himalayas.

Fossil species: Doubtful; 1–2 Gen. *Nyctaginaceae* in Oligocene and Miocene of W. N. America and Bohemia.

Mirabilis angustifolius (NUTT.).

Calymenia angustifolia NUTT. Fras. Cat. (1813).
Allionia linearis PURSH, Fl. Am. I, 729 (1814).
Oxybaphus angustifolius SWEET, Hort. Brit. 567 (1827).
Calyxhymenia pilosa ENGELM. and GRAY, Pl. Lindh. 293 (1845).

Wats. and Coult., Gray's Man. 6 ed. 425; Webb., Fl. Neb. 114; Coult., Fl. Colo. 302; Upham, Fl. Minn. 116; Mac., Fl. Can. I, 395; Wats., King. Exp. 284, 475; Roth., Wheel. Ex. 226; Cov., Fl. Ark. 214.

North America: Milk river, Cyprus hills, 49° N. lat. to Minn., Neb. and Tex.; E. to Iowa, W. to Cent. Idaho.

Minn. valley: N. E. and N. W districts; probably almost throughout; dry or rocky ridges.

HERB.: ? *Oestlund 155,* Minneapolis; ? *Herrick 256,* Minneapolis.

Mirabilis hirsutus (PURSH).

Allionia hirsuta PURSH, Fl. Am. 729 (1814).
Calymenia hirsuta NUTT. Gen. I, 26 (1818).
Oxybaphus hirsutus SWEET, Hort. Brit. 567 (1827).

Wats. and Coult., Gray's Man. 6 ed. 425; Mac., Fl. Can. I, 395; Webb., Fl. Neb. 114; Upham, Fl. Minn. 116; Coult., Fl. Colo. 302; Wats., King. Exp. 475; Roth., Wheel. Exp. 226.

North America: N. Saskatchewan and Assiniboia to Colo., Neb., W. Tex., Ark. and Wisc.

Minn. valley: Throughout; abundant in prairie district; rocky or dry banks.

HERB.: *Taylor 870,* Glenwood; *Sheldon 1342,* Lake Benton; *Taylor 139,* Glenwood; *Sheldon 1446,* Pipestone—dwarf forma *minima; Ballard 376,* Jordan; *Herrick 257,* Minneapolis; *Oestlund 254,* Minneapolis; *Sandberg 477,* Red Wing; *Herb. Moyer 212,* Montevideo.

Mirabilis nyctagineus (MICHX.).

Allionia nyctaginea MICHX. Fl. I, 100 (1803).
Oxybaphus nyctagineus SWEET, Hort. Brit. 537 (1827).

Wats. and Coult., Gray's Man. 6 ed. 425; Upham, Fl. Minn. 116; Mac., Fl. Can. I, 395; Webb., Fl. Neb. 114; Coult., Fl. Colo. 302; Roth., Wheel. Exp. 226; Wats., King. Exp. 475; Cov., Fl. Ark. 214.

North America: Souris river and Lake of Woods, Man.; S. to Mont., Tex. and N. Mex.; E. to Wisc., Neb., Ark. and La.

Minn. valley: Throughout; rocky or waste hillsides and shaded banks.

HERB.: *Ballard 370,* Helena, Scott Co.; *Taylor 592,* Minnesota lake; *Ballard 762,* Waconia; *Sheldon 1107,* Springfield; *Sheldon 366,* Madison Lake; *Taylor 340,* Janesville; *Sheldon 1577,* Lake Benton; *Oestlund 153,* Minneapolis; *Holzinger 194,* Winona Co.; *Herrick 256,* Minneapolis; *Kassube 972,* Mendota; *Sandberg 476,* Cannon Falls; *Herb. Sheld. 1743,* Minneapolis; *Herb. Moyer. 211,* Montevideo.

XXXVII. PORTULACACEAE. Portulaca Family.

Endlicher, *Gen. Pl.* 946 (1840); Benth. and Hook. *Gen. Pl.* I, 155 (1865); Pax, *in Engler and Prantl, Nat. Pflanz* 3, I *b*, 51 (1889).

Genera: 17; *Talinum* and *Portulaca* are in all tropical and subtropical regions; other genera less widely distributed; found in temperate and tropical regions of both hemispheres.

Species: 150± ; principally in temperate regions approaching the tropics.

TALINUM ADANS. Fam. Pl. II, 245 (1763).

Phemeranthus RAF. Specch. I, 56 (1814).

? **Eutmon** RAF. Atl. Journ. V, 23 (1820?).

Baillon, *Hist. Pl.* IX, 68; Benth. and Hook., *Gen. Pl.* I, 157; Durand, *Ind. Gen. Phan.* 31; Engler and Prantl, *Nat. Pflanz.* 3, I *b*, 56; Gray, *Ill. Gen.* I, 225.

Living species: 15+; Cape of Good Hope, 1; trop. Africa, 3; the rest in tropical and warmer America; N. America, 8; W. Tex., 4–5; S. Sts., 1; Rocky mts., 1; E. Sts., 1; Pl. King, 1; Pl. Wheel., 3–4.

Talinum teretifolium PURSH, Fl. Am. 365 (1814).

Phemeranthus teretifolius RAF. Specch. I, 86 (1814).

Talinum ciliatum WALP. Rep. II, 934 (1843).

Wats. and Coult., Gray's Man. 6 ed. 91; Coult., Fl. Colo. 37; Webb., Fl. Neb. 115; Upham, Fl. Minn. 33; Chap., Fl. S. St. 44; Engl. Pax, Nat. Pflanz. III, 1, 56; Cov., Fl. Ark. 169; Wats., Bibl. Ind. I, 121.

North America: Penn. to N. Car.; W. to Ind., Minn., Neb., Colo. and Ark.

Minn. valley: New Ulm to Ortonville; edges of gneiss, syenite or quartzite rock; especially in bed of the Warren.

HERB.: *Sheldon 1446*, Pipestone City; *Sheldon 1200*, Redstone, near New Ulm; *Herb. Moyer 41*, Montevideo.

CLAYTONIA LINN. Gen. 849 (1737).

Limnia LINN. Act. Ups. 130 (1746).

Baillon, *Hist. Pl.* IX, 68; Benth. and Hook., *Gen. Pl.* I, 158; Durand, *Ind. Gen. Phan.* 31; Engler and Prantl, *Nat. Pflanz.* 3, I *b*, 57 (Pax); Gray, *Ill. Gen.* 223; O. Kuntze, *Rev. Gen.* I, 56.

Living species: 20±; Arctic regions in N. Hemisphere; especially W. and N. in America and E. in Siberia; possibly 1 sp. in Australia and New Zealand. Russia, 11; N. America, 16–17; Calif., 13; Canada, 15–16; E. Sts., 2; Rocky mts., 5-6; S. Sts., 2; Pl. King, 5; Pl. Wheel., 5; Central Calif., 8.

Claytonia virginica LINN. Spec. 204 (1753).

C. acutiflora SWEET, Hort. Brit. 2 ed. (1830).

C. grandiflora SWEET, Brit. Fl. Gard. 2 ser. 216 (1831–1838).

Wats. and Coult., Gray's Man. 6 ed. 91; Britt., Fl. N. J. 66; Upham, Fl. Minn. 34; Webb., Fl. Neb. 115; Chap., Fl. S. St. 44; Wats., Bibl. Ind. I, 119; Mac., Fl. Can. I, 82; Engl. Pax, Nat. Pflanz. III, 1, 57; Cov., Fl. Ark. 169; Rothr., Alask. 446.

North America: N. S., N. Br., Ont., Man., Saskatchewan to Alaska; S. to N. Eng., N. J., N. Car.; W. to Ohio, Minn., Neb., Mo. and Ark.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; damp woodland and in open groves.

HERB.: *Sandberg 99*, Goodhue Co.; *Leiberg 13*, Blue Earth Co.; *Leiberg 14*, Blue Earth Co.; *Herb. Sheld. 1872*, St. Paul; *Herb. Wickersheim 25*, Mankato.

PORTULACA LINN. Gen. 341 (1737).
Meridiana LINN. f. Suppl. 248 (1781).
Merida NECK. Elem. 1195 (1790).
Lamia VAND. Roem. Script. 116 (1796).

Baillon, *Hist. Pl.* IX, 67; Benth. and Hook., *Gen. Pl.* I, 156; Durand, *Ind. Gen. Phan.* 31; Engler and Prantl, *Nat. Pflanz.* 3, I *b*, 59 (Pax); Gray, *Ill. Gen.* I, 227.

Living species: 20±; tropical and subtropical regions, especially N. America and N. Australia. One species cosmopolitan; one other widely diffused. 16 sp. (B. and H.); Russia, Russian Europe and Europe, 1; North America, 10; W. Tex., 6; Calif., 3; S. Sts., 3; Rocky mts., 1; E. Sts., 2; Pl. King, 1; Pl. Wheel., 1–2.

Portulaca retusa ENGELM. and GRAY, Pl. Lindh. 154 (1845).

Wats. and Coult., Gray's Man., 6 ed. 90; Coult., Fl. Colo. 37; Brew. and Wats., Fl. Calif. I, 74; Upham, Fl. Minn. 33; Coult., Fl. Tex. 31; Wats., Bibl. Ind. I, 121.

North America: Colo. river to Tex.; N. to Ark.? Kan., Iowa and Minn

Minn. valley: West and on higher levels; waste ground along streams.

XXXVIII. CARYOPHYLLACEAE. Pink Family.

Endlicher, *Gen. Pl.* 955 (1840); St. Hil., *Mem. Plac. Lib.* 56 (1816)—*Paronychieae;* R. Br., *Prodr.* 413 (1810)—*Illecebraceae;* De Candolle, *Fl. France*, 3 ed. IV, 766 (1805)—*Alsinaceae;* Bartling, *Ord. Nat.* 305 (1830)—*Silenaceae* and 300, *Scleranthaceae;* Benth. and Hook., *Gen. Pl.* I, 141; III, 12 (1865–1880); Pax, Engler and Prantl, *Nat. Pflanz.* 3, I *b*, 60 (1889).

Genera: 70; cosmopolitan in distribution.

Species: 1250; many cosmopolitan; principally in N. temperate zone.

SILENE LINN. Gen. 372 (1737).
Heliosperma REICH. Ic. Fl. Germ. VI, 277 (1842).
Elisanthe FENZL. Endl. Gen. 972 (1836–40).
Carpophora KLOTZSCH, Reis. Wald. 139 (1840?).
Cucubalus SPACH, Suit. Buff. V, 172 (1838).

Baillon, *Hist. Pl.* IX, 109; Benth. and Hook., *Gen. Pl.* I, 147; Durand, *Ind. Gen. Phan.* 29; Engler and Prantl, *Nat. Pflanz.* 3, I *b*, 70 (Pax).

Living species: 300+; 480+ described; 250 (Durand); 31+, N. America; 12–15, S. Africa; the rest in the Mediterranean region and extra-tropical Asia. Russia, 70; Europe, 150+; Russian Europe, 37; Calif., 22; Canada, 12–15; E. Sts., 8; S. Sts., 9; W. Tex., 2; Pl. King, 5; Pl. Wheel., 6; Rocky mts., 6.

Silene antirrhina LINN. Spec. 419 (1753).

Saponaria dioica CHAM. and SCHL. Linn. I, 38 (1826).

Wats. and Coult., Gray's Man. 6 ed. 84; Coult., Fl. Colo. 32; Webb., Fl. Neb. 114; Chap., Fl. S. St. 52; Upham, Fl. Minn. 32; Britt., Fl. N. J. 61; Brew. and Wats., Fl. Calif. I, 63; Mac., Fl. Can. I, 67; Engl. Pax, Nat Pflanz. III, 1, 72; Coult., Fl. Tex. 29; Greene, Fl. Fran. 116; Wats., King Exp. 36, 432; Cov., Fl. Ark. 168; Wats., Bibl. Ind. I, 106.

North America: Ottawa to Vancouver; S. to Calif., Colo., Tex., and E. to Maine and Fla.; Gt. Basin.

Minn. valley: Forest region and wooded banks; especially E. and S.; open places in woods.

HERB.: *Sheldon 713*, Sleepy Eye; *Taylor 476*, Janesville; *Ballard 248*, Jordan, Scott Co.; *Ballard 589*, Crystal lake, Scott Co.; *Kassube 42*, Mendota; *Holzinger 37*, Winona Co.; *Herrick 50*, Minneapolis; *Sandberg 92*, Cannon Falls.

Silene virginica LINN. Spec. 419 (1753) in part.

S. catesbaei WALT. Fl. Car. 141 (1788).

S. coccinea MOENCH, Suppl. 306 (1802).

Melandryum virginicum A. BR. Reg. Flora (1843).

Wats. and Coult., Gray's Man. 6 ed. 84; Britt., Fl. N. J. 61; Upham, Fl. Minn. 31; Chap., Fl. S. St. 51; Mac., Fl. Can. I, 67; Wats., King Exp. 431; Cov., Fl. Ark. 168; Wats., Bibl. Ind. 110.

North America: S. W. Ont., W. N. Y. to N. J.; S. to Tenn.; W. to Minn., Ark. and Nev.

Minn. valley: Nicollet Co.; local and rare.

Silene alba MUHL. Cat. (1813).

Cucubalus niveus NUTT. Gen. I, 287 (1818).

Silene nivea DC. Prodr. I, 377 (1824).

Wats. and Coult., Gray's Man. 6 ed. 84; Upham, Fl. Minn. 31; Wats., King Exp. 431; Wats., Bibl. Ind. I, 108.

North America: Penn. to Iowa and Minn.

Minn. valley: S. and E.; rare; localities like *S. stellata* (Linn.).

HERB.: *Holzinger 36*, Winona Co.; *Sandberg 91*, Cannon Falls.

Silene stellata (LINN.) AIT. f. Hort. Kew. III, 84 (1811).

Cucubalus stellatus LINN. Spec. 414 (1753).

Wats. and Coult., Gray's Man. 6 ed. 84; Upham, Fl. Minn. 31. Webb., Fl. Neb. 115; Britt., Fl. N. J. 60; Chap., Fl. S. St. 51; Mac., Fl. Can. I, 67; Wats., King Exp. 432; Cov., Fl. Ark. 168; Wats., Bibl. Ind. I, 109.

North America: Can. side of Niagara river to R. I., N. J. and Va.; W. to Minn., Neb., Colo., Ark. and Utah.

Minn. valley: Throughout; banks of streams and lakes and in woodland.

HERB.: *Ballard 698,* Waconia; *Ballard 565,* Prior's lake, Scott Co.; *Ballard 792,* Goose lake, Carver Co.; *Ballard 734,* Waconia; *Sheldon 561,* Waseca; *Sheldon 990,* Sleepy Eye; *Sheldon 1259,* Lake Benton; *Taylor 616,* Minnesota lake; *Sheldon 1487,* Pipestone city; *Holzinger 34,* Winona Co.; *Herrick 49,* Minneapolis; *Sandberg 90,* Goodhue Co.; *Holzinger 35,* Winona Co.; *Herb. Wickersheim, 23,* Lake Benton.

STELLULARIA LINN. Syst. ed. VI, (1748) ex. Kuntze, Rev. Gen. I, 52 (1891).

Stellaria BENTH. and HOOK. Gen. Pl, I, 140 (1862).
Krascheninikowia TURCZ. Flora B. b., 9 (1834).
Brachystemma DON. Prodr. Nep., 216 (1803).
Adenonema BUNGE, Suppl. Alt., 36 (1836).
Spergulastrum MICHX. Fl. Bor.-Amer., I, 295 (1803).
Micropetalon PERS. Syn. I, 500 (1805).
Larbraea ST. HIL. Mem. Mus. Par., II, 287 (1816).
Leucostemma BENTH. Royle, Him., 81 (1839).
Schizothecium FENZL. Endl. Gen., 969 (1836–40).

Baillon, *Hist. Pl.* IX, 113; Benth. and Hook, *Gen. Pl.* I, 149; Durand, *Ind. Gen. Phan.* 30; Engler and Prantl, *Nat. Pflanz.* 3, I *b.* 79 (Pax); Gray, *Ill. Gen.* II, 37; O. Kuntze, *Rev. Gen.* I, 52.

Living species: 80+; 70 (B. and H.); temperate and colder regions, also a few in high mountains in the tropics; Russia, 37; Europe, 16; Russian Europe, 15; North America, 20; Canada, 15; Rocky mts., 7; mid. Calif., 7: S. Sts., 5; E. Sts., 7; Pl. King, 6; Pl. Wheel., 3.

Stellularia crassifolia (EHRH.) ASCHERSON, Fl. Prov. Brand., 932 (1864).

Stellaria crassifolia EHRH. Beitr., III, 360 (1788).

S. borealis var. *B.* HOOK. Fl. Bor.-Am., I, 95 (1833).

Wats. and Coult., Gray's Man. 6 ed. 87; Coult., Fl. Colo. 34; Upham, Fl. Minn. 32; Trautv., Fl. Sib. 35; Regel, Fl. O.-Sib. I, 394; Mac., Fl. Can. I, 75, 497; Led., Fl. Ross. I, 383; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 28; Wats., King Exp. 417; Roth., Wheel. Exp. 71; Wats., Bibl. Ind. I, 111; Hart., Fl. Scand. I, 238; Rothr., Alask. 444.

N. Europe; N. Asia; Siberia—Baikal region; Kamtk.

North America: Gulf of St. Lawrence, Man. to Alaska; Labrador; N. Br. and Anticosti; S. to Minn, Ill., Ky. and W. to Mont. and Colo.

Minn. valley: N. E. district, Ft. Snelling and E. edge; ditches and marshes; rare.

HERB.: ? *Sandberg 96*, Cannon Falls.

Stellularia longipes (GOLDIE).

Stellaria longipes GOLDIE, Edin. Phil. Journ. VI, 185 (1822).
S. glauca MEY. Pl. Labr. 93 (1830).
S. crassifolia WATS. King Exp. 35 (1875).
S. longifolia ROTH. Wheel. Exp. 35 (1818).

Wats. and Coult., Gray's Man. 6 ed. 87; Coult. Fl. Colo. 34; Upham, Fl. Minn. 32; Brew. and Wats., Fl. Calif. I, 68; Regel, Fl. O.-Sib. I, 415; Mac., Fl. Can. I, 75; Led., Fl. Ross. I, 386; Nym., Fl. Eur.; Herd., Fl. Russ. Eur. 28; Wats., Bibl. Ind. I, 112; Greene, Fl. Fran. 122; Hart., Fl. Scand. I, 237; Rothr., Alask. 444.

Altai Siberia, Kamtk., Dahuria, Spitzberg., N. Zembla, Iceland.

North America: Greenland and N. S. to Pac. and Arctic ocean; S. to Yosemite; E. to Maine, Minn. and Wisc.; Alaska, Labrador and Cape Chudleigh in var.

Minn. valley: N. E. and possibly in the whole forest district; rare; grassy places.

HERB.: *Ballard 3*, Chaska; *Sandberg 95*, Chisago Co.; *Kassube 44*, Minneapolis.

Stellularia longifolia (MUHL.) O. KUNTZE, Rev. Gen. Pl. I, 55 (1891).

Stellaria longifolia MUHL. Willd. Enum. 479 (1809).
Spergulastrum gramineum MICHX. Fl. Am. I, 276 (1803).
Micropetalon gramineum PERS. Syn. I, 509 (1805).
Stellaria graminea BIGEL. Fl. Bost. ed. I, 110 (1814).
Micropetalon longifolium EAT. and WRIGHT, Man. 319 (1840).

Wats. and Coult., Gray's Man. 6 ed. 87; Britt., Fl. N J. 63; Upham, Fl. Minn. 32; Coult., Fl. Colo. 34; Regel, Fl. O.-Sib. I, 406, 415; Mac., Fl. Can. I, 74; Led., Fl. Ross. I, 392; Miyabe, Fl. Kur. 221; Herd., Fl. Eur. Russ. 28; Wats, Bibl. Ind. I, 112; Webb., Appx. Neb. 27; Rothr., Alask. 444.

Siberia, Manchuria, Kamtschatka, Saghalin and Kurile Isls.; mid. Russia-in-Europe.

North America: N. S. to Pac. and Alaska; N. to lat. 54° and 64°; S. to Oregon; E. to Minn., N. J. and N. Eng.

Minn. valley: Forest district and banks of streams; meadows and grassy places in forest openings. E. and N.

HERB.: *Taylor 306*, Janesville; *Sheldon 130*, Madison Lake; *Sheldon 555*, Waseca; *Herrick 52*, Minneapolis; *Bailey 102*, Vermilion lake; *Sandberg 94,* Tower; *Holzinger 38,* Goodhue Co.; *Holzinger 39,* Winona Co.; *Herb. Sheld. 1720,* Minneapolis; *Herb. Moger 39,* Chippewa river near Montevideo.

CERASTIUM LINN. Gen. 376 (1737).

Dichodon BARTL. Endl. Gen. 970 (1836-40).
Moenchia EHRH. Beitr. II, 177 (1788).
Pentaple REICH. Ic. Fl. Germ. V, 37 (1842).
Dufourea GREN. ex Endl. Gen. 967 (1836-40).
Esmarckia REICH. Ic. Fl. Germ. V, 227 (1842).

Benth. and Hook., *Gen. Pl.* I, 148; Baillon, *Hist. Pl.* IX, 112. Durand, *Ind. Gen. Phan.* 30; Engler and Prantl, *Nat. Pflanz.* 3, I *b.* 80-81 (Pax); Gray, *Ill. Gen.* II, 39.

Living species: 60±; 100 described; 40 (B. and H.); 45 (Durand); Russia, 35; Europe, 39; Russian Europe, 18; 9-11, North America; Canada, 9; mid. Calif., 4; S. Sts., 4; E. Sts., 2; Rocky mts., 3; Pl. King, 3; Pl. Wheel., 3; W. Tex., 2.

Cerastium arvense LINN. Spec. 438 (1753).

C. pennsylvanicum HORNEM. Hort. Hafn. 435 (1813).
C. elongatum and *tenuifolium* PURSH. Fl. Am. 321 (1814).

Wats. and Coult., Gray's Man. 6 ed. 88; Britt., Fl. N. J. 62; Upham, Fl. Minn. 33; Coult., Fl. Colo. 33; Brew. and Wats., Fl. Calif, I, 67; Hook., Fl. Gt. Brit. 60; Chap., Fl. S. St. 50; Regel, Fl. O.-Sib. I, 444 Mac., Fl. Can. I, 77; Forbes and Hems., Fl. Sin. 66; Led., Fl. Ross. I, 412; Nym., Fl. Eur.; Herd., Eur. Russ. 28; Wats., Bibl. Ind. I, 100; Engl. Pax, Nat. Pflanz. III, 1, 80; Roth., Wheel. Exp. 71; Wats., King Exp. 38; Greene, Fl. Fran. 121.

Arctic Europe; N. Africa; Siberia; W. Asia; Patagonia; Chile.

North America: N. S. to Vancouver; N. U. S. from Maine to Va.; W. to Minn., Colo., Utah, Nev. and Calif.

Minn. valley: Throughout; but rare; less common E. than W.; dry or rocky places.

HERB.: ? *Sandberg 98,* Cannon Falls; *Herb. Wickersheim 24,* Idlewild, Lincoln Co.; *Sheldon 1490,* Pipestone city.

Cerastium arvense LINN. var. **bracteatum** (RAF.).

C. arvense PURSH. Fl. Am. 231 (1814).
C. villosum MUHL. Cat. 46 (1813 .
C. bracteatum RAF. Prec. Decouv. 36 (1817).
C. pubescens GOLDIE, Edin. Phil. Journ. IV, 328 (1821).
C. oblongifolium TORR. Fl. U. S. 460 (1824).
C. pennsylvanicum HOOK. Fl. Bor.-Am. I, 104 (1833).
C. arvense var. *oblongifolium* BRITT. and HOLL.

Wats. and Coult., Gray's Man. 6 ed. 88; Upham, Fl, Minn. 32; Regel, Fl. O.-Sib. I, 445; Mac., Fl. Can. I, 77; Forbes and Hems., Fl. Sin. 66; Herd., Fl. Eur. Russ. 28; Engl. Pax, Nat. Pflanz. III, 1, 80: Wats., Bibl. Ind. I, 101.

Species in N. Eur. and N. Asia to Himalayas and China; variety perhaps in Amurland and Baikal Siberia.

North America: Ont. and N. Y. to N. J., Minn. and Mo.

Minn. valley: S. E. districts; rare; rocky or sandy banks.

HERB.: *Holzinger 39,* Winona Co.

Cerastium nutans RAF. Prec. Decouv. 36 (1814).

C. longipedunculatum MUHL. Cat. 47 (1813).
C. glutinosum NUTT. Gen. I, 291 (1818).
C. tenellum FENZL. Ann. Mus. Wien (1835).
C. oblongifolium ANDERS. Cat. Pl. Nev. 118 (——).

Wats. and Coult., Gray's Man. 6 ed. 88; Coult., Fl. Colo. 33; Webb., Fl. Neb. 114; Chap., Fl. S. St. 50; Brew. and Wats. Fl. Calif. I, 66; Britt., Fl. N. J 63; Upham, Fl. Minn. 32; Mac., Fl. Can. I, 77; Roth., Wheel. Exp. 71; Wats., King Exp. 38; Cov., Fl. Ark. 168; Wats., Bibl. Ind. I, 100; Hart. Fl Scand. I, 239.

North America: N. S., N. Br., Q. to Man., Hudson Bay and Vancouver; S. to Vt., N. J., Penn. and N. Car., Tenn. and Ark.; W. to Colo., Minn., Neb., Utah, Washington; S. in Rockies to Northern Mexico.

Minn. valley: Forest district to Blue Earth Co.; banks of streams to Chippewa river; moist woods and meadows.

HERB.: *Sheldon 182,* Eagle lake, Blue Earth Co.; *Taylor 68,* Elysian; *Sandberg 97,* Vasa; *Kassube 45,* Minneapolis; *Holzinger 38,* Winona Co.; *Leiberg 12,* Blue Earth Co.; *Herb. Moyer 40,* Montevideo; *Herb. Sheld. 1871,* Ramsey Co.

MOEHRINGIA LINN. Gen. ed. II, 386 (1742).

Engler and Prantl, *Nat. Pflanz.* 3, I *b*, 84 (Pax); Baillon, *Hist. Pl.* IX, 113; Benth. and Hook., *Gen. Pl.* I, 150; Durand, *Ind. Gen. Phan.* 30; Gray, *Ill. Gen.* II, 35.

Living species: 20±; colder regions of N. hemisphere.

Moehringia lateriflora (LINN.) FENZL. Ann. Mus. Wien, I, 18, 38 (1835).

Arenaria lateriflora LINN. Spec. 423 (1753).
A. buxifolia POIR. Enc. Meth. VI, 362 (1804).
Stellaria biflora PURSH, Fl. Am. 317 (1814)
Arenaria pennsylvanica MUHL. Ind. Fl. Lancaster, 169 (1817).

Wats. and Coult., Gray's Man. 6 ed. 86; Britt., Fl. N. J. 64; Webb., Fl. Neb. 114; Coult., Fl. Colo.36; Upham, Fl. Minn. 32; Brew. and Wats., Fl. Calif. I, 70; Regel, Fl. Ost.-Sib. I, 376; Trautv., Fl. Sib. 35; Mac. Fl. Can. I, 73, 497; Miyabe, Fl. Kur.221; Engl. Pax, Nat. Pflanz. 3, I, 84; Roth., Wheel. Exp. 72; Wats., Bibl. Ind. I, 96; Hart., Fl. Scand. I, 242; Rothr., Alask. 444.

Kamtschatka; Dahuria; Baikal Sib.; Kurile Isls. to Scandinavia.

North America: N. S. to Vancouver, lat. 60° N. and Ft. Selkirk, Alaska; S. to Oregon; S. to N. Eng., N. J., Penn.; W. to Minn., Neb. and Mo.

Minn. valley: E. and N. E. districts; shores of lakes and streams.

HERB.: *Ballard 392*, Jordan, Scott Co.; *Sheldon 512*, Waseca; *Ballard 51*, Chaska; *Taylor 280*, Janesville; *Herrick 51*, Minneapolis; *Kassube 43*, Minneapolis; *Sandberg 93*, Red Wing; *Herb. Sheld. 1890*, Minneapolis; *1759*, St. Paul.

ANYCHIA RICH. Michx. Fl. Bor.-Am. I, 112 (1803) p. p.

Baillon, *Hist Pl.* IX, 122; Benth. and Hook., *Gen. Pl.* III,16; Engler and Prantl, *Nat. Pflanz.* 3, I b, 91 (Pax); Durand, *Ind. Gen. Phan.* 332 Gray, *Ill. Gen.* 19.

Living species: 2; E. North America from Canada to Texas.

Anychia dichotoma (MOENCH) MICHX. Fl. N. Am. I, 113 (1803).

Queria dichotoma MOENCH, Meth. 351 (1794).
Q. canadensis NUTT. Gen. I, 158 (1818).
Paronychia dichotoma FENZL. Walp. Rep. I, 262 (1842).
Paronychia canadensis WOOD, Bot. 262 (1861).

Wats. and Coult., Gray's Man. 6 ed. 426; Britt., Fl. N. J. 204; Upham, Fl. Minn. 33; Chap., Fl. S. St. 46; Mac., Fl. Can. I, 81; Wats., Bibl. Ind. I, 114.

North America: Ont.? and N. Eng. to Fla.; W. to Minn. and Ark.?

Minn. valley: Doubtfully present.

XXXIX. NYMPHAEACEAE. Water-Lily Family.

Benth. and Hook., *Gen. Pl.* I, 45 (1862); Baillon, *Hist. Pl.* III, 77 (1872) *excl. Sarracena;* Caspary *in Engler and Prantl, Nat. Pflanz.* 3, II, 1 (1888).

Genera: 7 living; 3 fossil; cosmopolitan; in fresh water and sometimes in mud.

Species: 50 living; 10–15 fossil; particularly in sub-tropical S. America.

NELUMBO ADANS. Fam. Pl. II, 76 (1763).

Nelumbium JUSS. Gen. Pl. 68 (1789).
Cyamus SM. Exot. Bot. I, 59 (1804).

Baillon, *Hist. Pl.* III, 101; Benth. and Hook., *Gen. Pl.* I, 47; Engler and Prantl, *Nat. Pflanz.* (Caspary) 3, II, 5; Durand, *Ind. Gen. Phan.* 10 Gray, *Ill. Gen.* 97; Schenck, *Palaeophyt.* 509.

Living species: 2; North America: to W. Indies and U. S. of Colombia, 1; Japan, warmer regions of Australia and Asia to Caspian sea, 1.

Fossil species: 5-6; Upper Cretaceous, Greenland (*Heer*); S. Europe (*Ettinghausen*) Oligocene and Neocene.

Nelumbo nelumbo (LINN.) MACM. Torr. Bull. XIX (1891).
Nymphaea nelumbo var. *B.* LINN. Spec. 511 (1753).
Nelumbium luteum WILLD. Spec. II, 1259 (1799).
Nelumbo lutea PERS. Syst. (1805).
Cyamus pentapetalus PURSH, Fl. Am. 398 (1814).
Cyamus lutea NUTT. Gen. II, 25 (1818).
Nelumbium codophyllum RAF. Fl. Lud. 22 (1817).
Nelumbium jamaicense DC. Syst. II, 47 (1821).

Wats. and Coult., Gray's Man. 6 ed. 55; Britt., Fl. N. J. 43; Webb., Fl. Neb. 117; Chap., Fl. S. St. 18; Upham, Fl. Minn. 22; Mac., Fl. Can. I, 31, 484; Gris., Fl. W. I; Engl. Caspary, Nat. Pflanz. III, 2, 5; Coult. Fl. Tex. 11; Cov., Fl. Ark. 164; Wats., Bibl. Ind. I, 36.

U. S. of Colombia; Jamaica.

North America: Ont. to N. Eng. and N. J.; Fla.; W. to Mich., Minn., Neb. and Tex. on the Rio Grande.

Minn. valley: Reported at Mendota and Halstead's bay, Lake Minnetonka; local, N. E.

HERB.: *Holzinger 12*, Fountain City; *Sandberg 44*, Red Wing.

BRASENIA SCHREB. Gen. Pl. 372 (1774).
Ixodia SOLAND. Mss. ex Endl. Gen.
Hydropeltis L. C. RICH. Ann. Mus. XVII, 230 (1811).

Baillon, *Hist. Pl.* III, 102; Benth. and Hook., *Gen. Pl.* I, 46; Engler and Prantl, *Nat. Pflanz.* (Caspary) 3, II, 6; Durand, *Ind. Gen. Phan.* 10; Gray, *Ill. Gen.* 95; Schenck, *Palaeophyt* 509 (sub *Nymphaeites ?*).

Living species: 1. In all regions outside of Europe and arctic or subarctic zones. Asia, Africa, Oceanica. America.

Fossil species: A number of leaves are referred to the Nymphaeaceae by different authors; some of which doubtless bear affinities with Brasenia. See *Caspary*, Monog. Nymph. and *Saporta*, Untersuchungen. Dawson (Can. Geol. Surv.) reports Brasenia from the Eocene of Canada. It doubtless dates back to the Cretaceous or Jurassic.

Brasenia peltata (THUNB.) PURSH, Fl. Am. 389 (1814).
Menyanthes peltata et *nymphoides* THUNB. Nov. Act. Ups. VII, 142 (1746).
Hydropeltis purpurea MICHX. Fl. N. Am. I, 324 (1803).
Brasenia hydropeltis MUHL. Cat. 55 (1813).
Limnanthemum peltatum GRISEB. Gent. 348 (1839).
Brasenia purpurea CASP. Ann. Mus. Lugd.-Bat. II, 256 (1850).
Brasenia nymphoides BAILL. Hist. Pl. III, 82 (1872).

Wats. and Coult., Gray's Man. 6 ed. 55; Britt., Fl. N. J. 43; Upham, Fl. Minn. 21; Chap., Fl. S. St. 19; Brew. and Wats., Fl. Calif. I, 16; Mac., Fl. Can. I, 483; Cov., Fl. Ark. 164; Wats., Bibl. Ind. I, 36; Engl. Caspary, Nat. Pflanz. III, 2, 6.

E. India; Japan; one station in tropical W. Africa; Australia; Cuba.

North America: Local from N. S., N. Br., Q., Ont., Man. to Puget Sound. S. to Tex. and Fla. Absent in lower Miss valley and Rocky mt. region?; S. in Calif.?

Minn. valley: N. localities; principally N. E. in valley; local in lakes and ponds, sometimes abundant.

HERB.: *Sheldon 704*, White Bear; *Sheldon 492*, Jefferson lake, Le Sueur Co.; *Ballard 898*, Waconia lake, Carver Co.; *Ballard 854*, Page lake, Carver Co.; *Herrick 22*, Minneapolis.

LEUCONYMPHAEA LUDW. Def. Pl. 69 (1737).

Castalia SALISB. Parad. Lond. 14, 68 (1805).

Nymphaea LINN. Gen. 653 (1737) *Emend.* SM. Prodr. Gr. I, 361 (1808).

Baillon, *Hist. Pl.* III, 102; Benth. and Hook., *Gen. Pl.* I, 46; Engler and Prantl, *Nat. Pflanz.* 3, II, 7 (Caspary); Durand, *Ind. Gen. Phan.* 10; Gray, *Ill. Gen.* I, 101; Schenck, *Palaeophyt.* 509; O. Kuntze, *Rev. Gen.* I, 12.

Living species: 32; 20 (B. and H.); 25 (Durand); temperate regions of Northern hemisphere; Africa, Australia, South America, and a few in tropical waters. 1 sp. almost cosmopolitan; Russia, 5; Europe, 3; Russian Europe, 3; North America, 6; Canada, 3; E. Sts., 2; S. Sts., 2; Tex., 3; Rocky mts., 1.

Fossil species: Upper Cretaceous, South of France, Tertiary N. Amer., France and Germany (*Heer, Lesquerx., Saporta, Ettinghausen*) 6–10 sp.

Leuconymphaea reniformis (DC.).

Nymphaea reniformis DC. Syst. II, 55 (1821).
N. alba NUTT. Gen. II, 13 (1818).
N. maculata and *spiralis* RAF. Med. Bot. II, 45 (1830).
N. tuberosa PAINE, Cat. Pl. Oneida 184 (1864).
Castalia tuberosa GREENE, Torr. Bull. XV, (1888).
C. reniformis COV. Fl. Ark. 164 (1891).

Britt., Fl. N. J. 44; Webb., Fl. Neb. 117; Upham, Fl. Minn. 22; Mac., Fl. Can. I, 31; Engl. Caspary, Nat. Pflanz. III, 2, 9; Wats., Bibl. Ind. I, 39; Wats. and Coult., Gray's Man. 6 ed. 56.

North America: Region around the Great Lakes. Common throughout Minn., Wisc., Mich., Ont. and Man.?

Minn. valley: Abundant throughout in lakes and ponds, especially in the forest region.

HERB.: *Ballard 456*, Prior's lake, Scott Co.; *Sheldon*

369, Duck lake, Blue Earth Co.; *Ballard 412,* Jodan, Scott Co.; *Bailey 138,* Vermilion lake.

Leuconymphaea ordorata (DRYAND.).

Nymphaea alba WALT. Fl. Car. 155 (1788).
N. ordorata DRYAND. B. B. (1789).
N. odorata AIT. Hort. Kew. II, 227 (1789).
Castalia pudica SALISB. Parad. Lond. 14 (1806).
C. ordorata WOODV. and WOOD, Rees Cycl. VI, 1 (1819).
C. odorata GREENE, Torr. Bull. XV (1888).

Wats. and Coult., Gray's Man. 6 ed. 55; Britt., Fl. N. J. 619; Mac., Fl. Can. I, 31; Chap., Fl. S. St. 19; Upham, Fl. Minn. 22; Engl. Caspary, Nat. Pflanz. III, 2, 9; Cov., Fl. Ark. 164; Wats., Bibl. Ind. I, 38.

North America: N. S., N. Br., Q., Ont. to Man.; S. to N. Eng., N. J. and Fla.; W. to Ohio, Minn. and Ark.

Minn. valley: Reported from Lake Crystal, Blue Earth Co., and probably sparingly in E. and S. parts of forest region. Lakes and ponds.

HERB: ? *Kassube 19,* Minneapolis; *Sandberg 45,* Chisago Co.

NYMPHAEA LUDW. Defin. Pl. (1737).

Nymphosanthus RICH. Anal. Fr. 68 (1808—May).
Nuphar SM. Prodr. Fl. Graec. I, 361 (1808-09).
Nenuphar HAYNE, MSS. ex Endl. Gen. (1840).

Baillon, *Hist. Pl.* III, 102; Benth. and Hook., *Gen. Pl.* I, 46; Engler and Prantl, Nat. Pflanz. 3, II, 9 (Caspary); Durand, *Ind. Gen. Phan.* 10; O. Kuntze, *Rev. Gen. Pl.* I, 12; Gray, *Ill. Gen.* I, 103; Schenck, *Palaeophyt.* 509.

Living species: 7; 3-4 (B. and H.); Northern hemisphere, in arctic, temperate and warmer regions, extra-tropical. Russia, 3; Europe, 3; North America, 5; Canada, 4; Calif., 2; E. Sts., 3; Rocky mts., 1; S. Sts., 2; Pl. King, 1.

Fossil species: Probably several remains are to be placed here. Tertiary and Interglacial; France, England, N. America. See *Caspary,* Monog., Ann. Sci. Nat. ser. 4, VI, 216.

Nymphaea advena SOLANDER, v. Bibl. Banks.

N. lutea WALT. Fl. Car. 154 (1788).
N. arifolia SALISB. Ann. Bot. II, 71 (1806).
Nuphar advena AIT. f. Hort. Kew. III, 295 (1811).

Wats. and Coult., Gray's Man. 6 ed. 56; Webb., Fl. Neb. 117; Britt., Fl. N. J. 44; Coult., Fl. Colo. 12; Chap., Fl. S. St. 20; Upham, Fl. Minn. 22; Mac., Fl. Can. I, 32; ?Led., Fl. Ross. I, 84; Mac., Fl. Can. I, 484; Engl. Caspary, Nat. Pflanz. III, 2, 9; Coult., Fl. Tex. 11; Wats., King Exp. 13; Cov., Fl. Ark. 164; Wats., Bibl. Ind. I, 37.

Eastern Siberia?

North America: Anticosti, Labrador, N. S., N. Br., Q., Ont. to Brit. Col.; N. to lat. 57°; U. S., except Pac. coast reg. and far S. W.—Yellowstone Park to W. Tex.

Minn. valley: Throughout in ponds, lakes and sluggish streams; often semi-terrestrial in flats and sloughs.

HERB.: *Ballard 457*, Prior's lake, Scott Co.; *Sheldon 320*, Madison Lake; *Taylor 81*, Elysian; *Taylor 315*, Janesville; *Kassube 20*, Minneapolis; *Sandberg 46*, Vasa.

XL. CERATOPHYLLACEAE. Hornwort Family.

Benth. and Hook., *Gen. Pl.* III, 415 (1880); Endlicher, *Gen. Pl.* 267 (1840); Baillon, *Hist. Pl.* III, 479 (1872); Engler *in Engler and Prantl, Nat. Pflanz.* 3, II, 10 (1888).

Genera: 1; cosmopolitan; except in arctic and antartic regions.

Species: 3; in standing water, lakes and ponds.

CERATOPHYLLUM LINN. Gen. 725 (1737).

Hydroceratophyllum VAILL. Act. Par. (1719).

Dichotophyllum DILL. Gen. 91 (1719).

Baillon, *Hist. Pl.* III, 495; Benth. and Hook., *Gen. Pl.* III, 382; Durand, *Ind. Gen. Phan.* 382; Schenck, *Palaeophyt.* 632.

Living species: 10 described; 3 reduced; perhaps only 1; cosmopolitan.

Fossil species: *C. vulgaris* in Forest Bed of Cromer (Schenck)?

Ceratophyllum demersum LINN. Spec. 992 (1753).

Wats. and Coult., Gray's Man 6 ed. 488; Britt., Fl. N. J. 228; Chap., Fl. S. St. 398; Mac., Fl. Can. I, 459; Coult., Fl. Colo. 328; Wats., Fl. Calif. II, 78; Upham, Fl. Minn. 122; Led., Fl. Ross. II, 123; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 378; Herd., Fl. Eur. Ross. 52; Wats., King Exp. 319; Cov., Fl. Ark. 221; Hart., Fl. Scand. I, 384; Webb., Appx. Neb. 27; Greene, Fl. Fran. 230.

Europe and mid. Russ. to Caucasus; all Siberia to Japan.

North America: Ont., Sault Ste. Marie and L. Winnipegoosis to Washington, S. Calif. and Nev.; E. across cont. to N. Eng., N. J. and Fla.

Minn. valley: Reported from N. E. district; lakes and ponds. Aquatic.

XLI. RANUNCULACEAE. Crowfoot Family.

Endlicher, *Gen. Pl.* 843; Benth. and Hook., *Gen. Pl.* I, 1 (1862); Prantl, *Engler and Prantl, Nat. Pflanz.* 3, IV, 43 (1888).

Genera: 25; cosmopolitan; principally N. hemisphere.

Species: 1,000±; many cosmopolitan.

HYDRASTIS LINN. Gen. ed. VI, 704 (1764).

Baillon, *Hist. Pl.* I, 87; Benth. and Hook. *Gen. Pl.* I, 7; Engler and Prantl, *Nat. Pflanz.* 3, II, 55; Durand, *Ind. Gen. Phan.* 2; Gray, *Ill. Gen.* 47.

Living species: 2; Northern Japan, 1; subarctic and Atlantic forest region of N. Amer., 1.

Hydrastis canadensis LINN. Spec. 2 ed. 784 (1763).

Wats. and Coult., Gray's Man. 6 ed. 48; Britt., Fl. N. J. 40; Chap., Fl. S. St. 11; Upham, Fl. Minn. 20; Mac., Fl. Can. I, 27, 483; Engl. Prantl, Nat. Pflanz. III, 2, 55; Cov., Fl. Ark. 163; Wats., Bibl. Ind. I, 14.

North America: W. Ont. and Niagara river to N. Y., N. J. and Ga.; W. to Ohio, Tenn., Minn., Mo. and Ark.

Minn. valley: Reported from N. edge, and probably occurring rarely in N. forest region.

CALTHA LINN. Gen. 463 (1737).

Thacla SPACH, Suit. Buff. VII, 295 (1839).
Psychrophila Gay, Fl. Chile I, 47 (1845).
Populago TOURN. Inst. 273 (1700).

Baillon, *Hist. Pl.* I, 23 (sub *Trollius*); Benth. and Hook., *Gen. Pl.* I, 6; Engler and Prantl, *Nat. Pflanz.* 3, II, 56; Durand, *Ind. Gen. Phan.* 2; Gray, *Ill. Gen.* I, 31.

Living species: 16±; 9 (B. and H.); 10 species in northern, extratropical regions; 6–8 sp. Andes and Antarctic America, Australia and New Zealand. Russia, 4; N. America, 4–9; Canada, 4–6; E. Sts. 1; Calif., 2; S. Sts., 1; Pl. King, 1; Pl. Wheel., 1; Russian Europe, 2; Rocky mts., 1–2.

Caltha palustris LINN. Spec. 784 (1753).

C. arctica R. BR. Parr. 1st Voy. Appx. 265 (1824).

Wats. and Coult., Gray's Man. 6 ed 44; Britt., Fl. N. J. 38; Upham, Fl. Minn. 20; Hook., Fl. Gt. Brit. 11; Trautv., Fl. Sib. 12; Regel, Fl. O.-Sib. I, 52; Mac., Fl. Can. I, 23; Forbes and Hems., Fl. Sin. I, 17; Led., Fl. Ross. I, 48; Nym., Fl. Eur.; Herd., Fl. Russ. Eur. 10; Engl. Prantl, Nat. Pflanz. III, 2, 56; Cov., Fl. Ark. 163; Wats., Bibl. Ind. I, 8; Hart., Fl. Scand. I, 174; Rothr., Alask. 442.

Europe; N. and W. Asia and Siberia to Himalayas and China.

North America: Canada throughout and N. U. S. to Md., Ohio, Iowa, Dak. and Mont.

Minn. valley: Throughout at lower levels; swamps, sloughs, wet meadows, openings and with tamaracks.

HERB.: *Sheldon 780*, Sleepy Eye; *Sandberg 36*, Cannon Falls; *Leonard 3*, Minneapolis; *Herrick 17*, Minneapolis, *Holzinger 9,* Winona Co.; *Hammond 2,* Lake City; *Herb. Sheld. 1828,* Ramsey Co.; *Herb. Moyer 19,* Montevideo.

ISOPYRUM Linn. Gen. ed. II, 533 (1742).
Coptis Salisb. Linn. Trans. VIII, 305 (1807).
Chrysa Raf. Desf. Journ. Bot. II, 170 (1806).
Enemion Raf. Jour. Phys. XCI, 70 (1820).
Leptopyrum Reichb. Fl. Germ. 747 (1833).
Chrysocoptis Nutt. Trans. Acad. Phil. VII, 9 (1843).
Pterophyllum Nutt. l. c. (1843).

Baillon, *Hist. Pl.* I, 85; Benth. and Hook., *Gen. Pl.* I, 8: Engler and Prantl, *Nat. Pflanz* 3, II, 58: Durand, *Ind. Phan.* 2: O. Kuntze, *Rev. Gen. Pl.* 3: Gray, *Ill. Gen.* 35, 37.

Living species: 25; arctic and N. temperate regions; E. Asia, Japan and Himalayas; Atl. and Pac. North America; Russia, 6; Europe, 2; Japan, 8; North America, 7; Calif. and Oregon, 4; Can., 5; E. Sts., 2; S. Sts., 3.

Isopyrum trifolium (Linn.) Britt. Torr. Bull. XVIII, 265 (1891).
Helleborus trifolius Linn. Amoen. II, 355 (1750).
Coptis trifolia Salisb. Trans. Linn. Soc. VIII, 305 (1798
Chrysa borealis Raf. N. Y. Med. Rep. V, 350 (1808).

Wats. and Coult., Gray's Man. 6 ed. 45: Britt., Fl. N. J. 39: Upham, Fl. Minn. 20: Regel, Fl. O.-Sib. I, 61; Mac., Fl. Can. I, 23: Led., Fl. Ross, I, 52: Nym., Fl. Eur.; Miyabe, Fl. Kur. 216; Engl. Prantl, Nat. Pflanz. III, 2, 58; Wats., Bibl. Ind. I, 12; Rothr., Alask. 442.

Iceland; Kamtk. to Mid. Russ., Baikal Sib. and Mid. Japan.

North America: Greenland, Labrador, N. S., Newf., N. Br. to Rocky mts; S. to N. Eng., N. J., Md.; W. to Ohio, Iowa, Minn. and Dak.; Alaska.

Minn. valley: Forest region and perhaps in some prairie bogs; principally in tamarack swamps.

Herb.: *Leiberg 5,* Blue Earth Co.; *Sandberg 35,* Tower; *Roberts 6,* Devil's Neck river; *Leonard 2,* Minneapolis; *Bailey 312,* St. Louis river; *Herb. Sheldon 1825,* Lake Calhoun.

Isopyrum biternatum (Raf.) T. and G. Fl. I, 660 (1838).
Enemion biternatum Raf. Journ. Phys. II, 70 (1811?).
Isopyrum thalictroides Short, Pl. Kent. I, 8 (1833).

Wats. and Coult., Gray's Man. 6 ed. 44: Upham, Fl. Minn. 20: Chap., Fl. S. St. 9; Regel, Fl O.-Sib. I, 62: Mac., Bot. Gaz. XVI, 285: Cov., Fl. Ark. 163; Wats., Bibl. Ind. I, 14.

Kamtschkatka.

North America: Ont. and Minn. to Ohio and Fla.; W. to Iowa.

Minn. valley: Forest region; Ft. Snelling to New

Ulm and N. in valley; damp woods and banks.

HERB.: *Sheldon 178,* Eagle Lake, Blue Earth Co.; *Winchell 1,* Minneapolis; *Sandberg 34,* Red Wing; *Herb. Sheld. 1831,* Minneapolis.

ACTAEA LINN. Gen. 427 (1737).

Cimicifuga LINN. Am. Acad. VIII, 193 (1755).

Botrophis RAF. Med. Rep. II, hex. V, 350 (1808).

Macrotys RAF. l. c. (1808).

Pityrosperma SIEB. and ZUCC. Act. Monac. III, 734 (1843).

Actinospora TURCZ. Mss., F. and M. Ann. Sci. Nat. Ser. 2, IV, 333 (1835).

Christophoriana TOURN. Inst. 299 (1700).

Baillon, *Hist. Pl.* I, 88; Benth. and Hook., *Gen. Pl.* I, 9; Engler and Prantl, *Nat. Pflanz.* 3, II, 59; Durand, *Ind. Gen. Phan.* 2; Gray, *Ill. Gen.* 49, 51.

Living species; 50 described; 10 (B. and H.); 12 Durand); Russia, 7+; Europe, 2; Asia, 10; North America, 8; Canada, 4–5; Calif., 4; S. Sts., 4; Rocky mts., 2.

Actaea alba (LINN.) MILL. Dict. (1768).

A. spicata var. *alba* LINN. Spec. 504 (1753).

A. americana var. *A* PURSH, Fl. Am I, 366 (1814).

A. brachypetala var. *A* DC. Syst. I, 385 (1818).

A. pachypoda ELL. Sk. II, 15 (1824).

Wats. and Coult., Gray's Man. 6 ed. 48; Britt., Fl. N. J. 40; Upham, Fl. Minn. 21; Chap., Fl. S. St. 11; Mac., Fl. Can. 27; Wats., Bibl. Ind. I, 2; Greene, Pittonia, II, 107.

North America: Anticosti, N. S.. N. Br., Q., Ont., Man. to Coast range in Brit. Col.; S. to N. Eng., N. J. and S. Car.; W. to Ark., Mo., Minn. and Dak.

Minn. valley: Forest region with *A. rubra* (Ait.). Perhaps rather less abundant.

HERB.: *Taylor 701,* Minnesota lake; *Sheldon 804,* Sigel township, Brown Co.; *Ballard 405,* Jordan, Scott Co.; *Herrick 21,* Minneapolis; *Sandberg 39,* Red Wing; *Bailey 119,* Vermilion lake; *Sandberg 40,* Chisago lake.

Actaea rubra (AIT.) WILLD. Enum. 561 (1809).

A. spicata var. *rubra* AIT. Hort. Kew. II, 221 (1789)

A. americana var. *B* PURSH, Fl. Am. 366 (1814).

A. brachypetala var. *B* DC. Syst. I, 385 (1818).

Wats. and Coult., Gray's Man. 6 ed. 48; Coult., Fl. Colo. 11; Webb., Fl. Neb. 115; Upham, Fl. Minn. 21; Britt., Fl. N. J. 40; Regel, Fl. O.-Sib. I, 119; Mac., Fl. Can. I, 27; Forbes and Hems., Fl. Sin. I, 21, species *spicata*; Engl. Prantl, Nat. Pflanz. III, 2, 59?; Led., Fl. Ross. I, 71; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 10; Wats., Bibl. Ind. I, 2; Hart., Scand. Fl. (*A. spicata*), I, 176.

? Temperate and Arctic Europe; Russ. to Caucasus and

Baikal Sib. and Mongolia; China; Dahuria. It is not clear that these references belong to the N. American plant which is quite probably distinct and endemic.

North America: N. S., N. Br. to Rocky mts. and lat. 60° N.; U. S.; from Atl. to mts. of Colo. and S. to Ohio, Iowa and N. J.

Minn. valley: Forest region throughout and wooded banks W. at lower levels; damp and dark groves.

HERB.: *Taylor 516*, Mud lake, Waseca Co.: *Sheldon 860*, Sleepy Eye; *Sheldon 139*, Madison Lake; *Sheldon 82*, Elysian; *Ballard 56*, Chaska; *Taylor 263*, Janesville; *Sandberg 38*, Cannon Falls; *Oestlund 9*, Minneapolis; *Herrick 19*, Minneapolis; *Bailey 291*, St. Louis river; *Kassube 17*, Minneapolis; *Herrick 20*, Minneapolis; *Herb. Sheld. 1823*, Hennepin Co.; *Herb. Moyer 22*, Montevideo.

AQUILEGIA LINN. Gen. 450 (1737).

Baillon, *Hist. Pl.* I, 84; Benth. and Hook., *Gen. Pl.* I, 8; Engler and Prantl, *Nat. Pflanz.* 3, II, 59; Durand, *Ind. Gen. Phan.* 2; Gray, *Ill. Gen.* I, 39.

Living species: 50+ described; possibly only 6–8 actually distinct. Temperate northern hemisphere. Russia, 9; European Russia, 1; Europe, 8; North America, 8; Calif., 2; E. Sts., 2; Canada, 5; S. Sts., 1; Rocky mts., 7; Pl. Wheel., 4; Pl. King, 5

Aquilegia canadensis LINN. Spec. 533 (1753).

A. variegata MOENCH, Meth. 311 (1794).
A. elegans SALISB. Prodr. 374 (1796).

Wats. and Coult., Gray's Man. 6 ed. 46; Coult., Fl. Colo. 10; Webb., Fl. Neb. 116; Upham, Fl. Minn. 20; Chap., Fl. S. St. 9; Britt., Fl. N. J. 39; Mac., Fl. Can. I, 24; Led., Fl. Ross. I, 57; Engl. Prantl, Nat. Pflanz. III, 2, 59; Cov., Fl. Ark. 163; Wats., Bibl. Ind. I, 6.

Russian empire?

North America: Q., Ont., Man., Saskatchewan to Rocky mts.; S. E. to N. Eng., N. J., Fla. and W. in Northern States to Minn., Dak., Neb. and Colo.; S. in mts. to Arizona, N. Mex, and Mexico.

Minn. valley: Throughout, but principally in forest region; dry, wooded or sunny banks.

HERB.: *Sheldon 139*, Madison Lake; *Taylor 799*, Glenwood; *Ballard 71*, Chaska; *Taylor 71*, Elysian; *Sheldon 934*, Redwood Falls; *Taylor 143*, Janesville; *Kassube 15*, Minneapolis; *Sandberg 37*, Red Wing; *Leonard 41*, Washington P. O.; *Hammond 4*, Lake City; *Herb. Sheld. 1818*, Minneapolis; *Herb. Moyer 20*, Carlton lake, Chippewa Co.

DELPHINIUM LINN. Gen. 449 (1737).

Delphiniastrum SPACH, Suit. Buff. VII, 336 (1839).
Phledineum SPACH, l. c. 337 (1839).
Staphysagria SPACH, l. c. 347 (1839).
Aconitella SPACH, l. c. 358 (1839).
Consolida LINDL. Jour. Hort. Soc. VI, 55 (1851).
Ceratosanthus SCHUR. Enum. Transsylv. 30 (1866).
Aconitum LINN. Gen. 682 (1737).
Nirbisia DON. Gen. Syst. I, 63 (1831).

Baillon. *Hist Pl.* I, 85; Benth. and Hook., *Gen. Pl.* I, 9; Engler and Prantl, *Nat. Pflanz.* 3, II, 59, 60; Durand, *Ind. Gen. Phan.* 2; Gray, *Ill. Gen.* I, 41, 43.

Living species: 180±; 58 (B. and H.); 90 (Durand); temperate and mountainous regions of the northern hemisphere; Russia, 40±; Europe 28±; Russian Europe, 16; North America, 22+; and *Delphinium* (excl. *Aconitum*) 5, Canada; Calif., 9; E. Sts., 3; Rocky mts., 5; S. Sts., 3; Pl. Wheel., 4; Pl. King, 4.

Delphinium carolinianum WALT. Fl. Car. 155 (1788).

D. azureum MICHX. Fl. N. Am. I. 314 (1803).
D. virescens NUTT. Gen. II, 14 (1818).
D. vimineum DON. Sweet, Brit. Fl. I, 374 (1823).
D. simplex GRAY, Pl. Wright. II, 8 (1852).

Wats. and Coult., Gray's Man. 6 ed. 46; Webb., Fl. Neb. 116; Coult., Fl. Colo. 11; Chap., Fl. S. St. 10; Upham, Fl. Minn. 20; Mac., Fl. Can. I, 26; Coult., Fl. Tex. 9; Cov., Pl. Ark. 163; Wats., Bibl. Ind. I, 12.

North America: Man., Wis. and Minn.; S. to Fla.? and S. and W. Tex.; W. to Neb. sandhills, Colo. and Wyoming.

Minn. valley: Prairie region and sparingly in forest openings; rich banks in sunny localities, especially S.

HERB.: *Oestlund 7 and 8*, Minneapolis; *Ballard 182*, Jordan, Scott Co.; *Taylor 633*, Minnesota lake; *Sheldon 731*, Sleepy Eye; *Sheldon 1404*, Lake Benton; *Sheldon 535*, Waseca; *Ballard 385*, Jordan, Scott Co.; *Taylor 771*, Glenwood; *Herrick 18*, Minneapolis; *Kassube 16*, Minneapolis; *Holzinger 10*, Winona Co.; *Hammond 3*, Lake City; *Herb. Sheld. 1783*, Minneapolis; *Herb. Moyer. 21*, Montevideo.

Delphinium tricorne MICHX. Fl. N. Am. I, 314 (1803).

Wats. and Coult., Gray's Man. 6 ed. 46: Chap., Fl. S. St. 10; Upham, Fl. Minn. 20; Cov., Fl. Ark. 163; Wats., Bibl. Ind. I, 14; Webb., Appx. Neb. 30.

North America: Same range as *D. exaltatum* Ait.

Minn. valley: High, dry prairies S. and far S. W. in some localities. Rare.

Delphinium exaltatum AIT. Hort. Kew. II, 244 (1789).

D. urceolatum JACQ. Icon. Rar. I, 101 (1781).
D. tridactylum MICHX. Fl. N. Am. I, 314 (1803).

Wats. and Coult., Gray's Man. 6 ed. 46; Webb , Fl. Neb. 116; Upham, Fl. Minn. 20; Chap., Fl. S. St. 10; Wats., Bibl. Ind. I, 13.

North America: Penn. to Minn.; S. in Appalachians to N. Car.; W. to Ark. and Neb.

Minn. valley: Reported as frequent in the prairie regions. Minn. specimens have not been seen.

ANEMONE Linn. Gen. 459 (1737).

Syndesmon Hoffmg. Flora, Bl. 34 (1832).
Anemonella Spach, Suit. Buff. VII, 240 (1839).
Barneoudia Gay, Fl. Chile I, 29 (1845).
Homalocarpus Schur. Enum. Transsylv. 3 (1866).
Pulsatilla Tourn. Inst. 284 (1700).
Hepatica Dill. Nov. Gen. Giess. (1719).

Baillon, *Hist. Pl.* I, 86; Benth. and Hook., *Gen. Pl.* I, 4, 953; Engler and Prantl, *Nat. Pflanz* 3, II, 61; Durand, *Ind. Gen. Phan.* 1; Gray, *Ill. Gen.* I, 17, 19, 21; O. Kuntze, *Rev. Gen. Pl.* I, 1.

Living species: 90+; 70 (B. and H.); 85 (Durand); all extra-tropical regions and mts. in warm parts of the earth. Russia, 30; Europe, 20; European Russia, 14; America, 37; North America, 18; Canada, 16; E. Sts., 12; S. Sts., 5; Calif., 4–5; Rocky mts., 8; W. Tex., 1; Pl. Wheel., 4; Pl. King, 2–3.

Anemone thalictroides Linn. Spec. 542 (1753).

? *Thalictrum carolinianum* Walt. Fl. Car. 137 (1788).
T. anemonoides Michx. Fl. N. Am. I, 322 (1803).
Anemone thalictroides var. *uniflora* Pursh, Fl. Am. 387 (1814).
A. walteri Pursh, l. c. 387 (1814).
Syndesmon thalictroides Hoffmsgg, Flora XV (1832).
Anemonella thalictroides Spach, Hist. Veg. VII, 240 (1839).

Wats. and Coult., Gray's Man. 6 ed. 39; Chap., Fl. S. St. 6; Webb., Fl. Neb. 117; Britt., Fl. N. J. 34; Upham, Fl. Minn. 18; Mac , Fl. Can. I, 14, 478, II, 295; Cov., Fl. Ark. 162; Engl. Prantl, Nat. Pflanz. 3, II, 66; Wats., Bibl. Ind. I, 25; Britt., N. Amer. Anem. 237.

North America: S. Ontario and N. Eng. to Ga. and Fla.; W. to Dak., Neb., Kan., Mo., Ark. and Miss.

Minn. valley: Forest region; E. and N. in valley; extending to Blue Earth Co. Probably in N. and N. W. regions.

Herb.: *Holzinger 3*, Winona Co.; *Sandberg 14*, Goodhue Co.; *Herrick 5*, Minneapolis; *Holzinger 4*, Winona Co.; *Kassube 7*, Minneapolis; *Herb. Sheld. 1829*, Minneapolis.

Anemone hepatica Linn. Spec. 758 (1753).

Hepatica triloba Chaix, Vill. Dauph. I, 336 (1786).
H. triloba var. *americana* DC. Syst. I, 216 (1818).
H. americana Ker. Bot. Reg. t. 387 (1819).
Anemone americana Nich. Gard. Dict. 1, 74 (1884).
Hepatica hepatica Britt. Ann. N. Y. Acad. VI, 233 (1891).

Wats. and Coult., Gray's Man. 6 ed. 38; Britt., Fl. N. J. 34; Upham,

Fl. Minn. 18; Chap., Fl. S. St. 5; Mac., Fl. Can. I, 14, 478; Forbes and Hems., Fl. Sin. 11; Led., Fl. Ross. I, 22; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 8; Cov.. Fl. Ark. 162; Engl. Prantl, Nat. Pflanz. 3, II, 61; Hart., Scand. Fl. I, 172; Britt., N. Amer. Anem. 233; Rothr., Alask. 442.

N. Russia and N. Europe to Ural Siberia, China and Saghalin.

North America: Q., N. Br., Ont. to Minn., Mo. and Ark.; S. to N. J., Va. and Fla., and W. to Miss. valley; N. W. to Hudson Strait and Sitka, Alaska.

Minn. valley: Forest region; N. and E. portions of valley; doubtless extending to New Ulm.

HERB.: *Sheldon 79,* Elysian; *Sandberg 12,* Red Wing; *Herb. Sheld. 1830,* Ramsey Co.

Anemone hepatica LINN. var. **acuta** (PURSH) HITCHCOCK, Fl. Ames 482 (1891).

Hepatica triloba var. *acuta* PURSH, Fl. Am. 391 (1814).
H. acutiloba DC. Prodr. I, 22 (1824).
Anemone acutiloba LAWSON, Tran. N. S. Inst. III, 30 (1870).
A. acuta VAIL, Mem. Torr. Club. II, 42 (1890).
Hepatica acuta BRITT. Ann. N. Y. Acad. VI, 234 (1891).

Wats. and Coult., Gray's Man. 6 ed. 38; Britt., Fl. N. J. 34; Upham, Fl. Minn. 18; Mac., Fl. Can. I, 14; Cov., Fl. Ark. 162; Wats., Bibl. Ind. I, 3; Britt., N. Amer. Anem. 234.

North America: Q., Ont. to N. Eng., N. J. and Ga.; W. to Minn., Ills., Mo. and Ark. Range more western and probably more northern than the type.

Minn. valley: Forest region, with the typical form, but rather less abundant.

HERB.: *Ballard 198,* Jordan, Scott Co.; *Herrick 4,* Minneapolis; *Kassube 6,* Minneapolis; *Sandberg 13,* Vasa; *Holzinger 2,* Winona Co.

Anemone quinquefolia LINN. Spec. 541 (1753).

A. pedata RAF. Med. Rep. V, 361 (1808).
A. minima DC. Syst. I, 206 (1818).
A. nemorosa Auct. Amer., *not Linn.*
A. nemorosa and var. *quinquefolia* A. GRAY, Man. ed. 5, 38 (1867).

Wats. and Coult., Gray's Man. 6 ed. 38; Coult., Fl. Colo. 4; Wats., Bibl. Ind. I, 5; Brew. and Wats., Fl. Calif. I, 4; Britt., Fl. N. J. 34; Webb., Fl. Neb. 117; Upham, Fl. Minn. 17; Chap., Fl. S. St. 4; Regel, Fl. Sib. I, 15; Mac., Fl. Can. I, 13; Led., Fl. Ross. I, 15; Max., Fl. Amur. 17; Engl. Prantl, Nat. Pflanz. 3, II, 61 (*part*); Hart., Scand. Fl. I, 172 (*part?*).

Russia and Siberia to Kamtk., Amurland and Lapland? not in Europe. China!

North America: N. Br. to Brit. Col. and Vancouver; N. to Alaska, Hudson Bay and beyond Arctic circle; N. U. S.; S. in Appalachians to Va. and Ga.; in Sierras and Coast range to Calif.; Rocky mts. to Colo.; outside of mts. extending to Neb. and Ohio.

Minn. valley: Forest region and wooded banks; E. N. and S., extending westward on lower levels, but less abundant.

HERB.: *Sandberg 11*, Red Wing; *Kassube 5*, Minneapolis; *Herb. Wickersheim 7*, Madison Lake, Blue Earth Co. *Herb. Sheld. 1826*, Minneapolis.

Anemone dichotoma LINN. var. **canadensis** (LINN.).

A. canadensis LINN. Syst. 12, III, Appx. 231 (1768).
A. pennsylvanica LINN. Mant. II, 247 (1771).
A. irregularis LAM. Enc Meth. I, 167 (1783).
A. aconitifolia MICHX. Fl. N. Am. I, 320 (1803).
A. laxmanni STEUD. Nom. I, 96 (1840).
A. dichotoma Auct. Amer. plur., *not Linn.*

Wats. and Coult., Gray's Man. 6 ed. 38; Coult., Fl. Colo. 4; Webb., Fl. Neb. 117; Britt., Fl. N. J. 34; Upham, Fl. Minn. 17; Trautv., Fl. Bor.-Sib. 9 (*spec.*); Regel, Fl. O.-Sib. I, 17 (*spec.*); Led., Fl. Ross. I, 17 (*spec.*); Mac., Fl. Can. I, 13, 478; Herd., Fl. Eur. Russ. 8 (*spec*); Wats., Bibl Ind. I, 3; Britt., N. Amer. Anem. 227.

Eastern Russia and Siberia (the species).

North America: Anticosti and N. Br. to mouth of Mackenzie and Pac. coast; S. to N. Eng., N. J. and Penn. to Maryland; W. to Ohio, Minn., Mont., Colo., Neb. and Kan.

Minn valley: Principally N., E. and S., but extending westward on lower levels; woodland and meadow.

HERB.: *Ballard 536*, Cleary's lake, Scott Co.; *Ballard 322*, Belle Plaine; *Leonard 1*, Washington P. O.; *Herrick 2*, St. Louis river; *Sandberg 10*, Vasa; *Herrick 3*, Minneapolis; *Kassube 4*, Minneapolis; *Taylor 781*, Glenwood; *Sheldon 1316*, Lake Benton; *Sheldon 387*, Blue Earth Co.; *Sheldon 271*, Madison Lake, Blue Earth Co.; *Taylor 139*, Janesville; *Taylor 16*, Elysian; *Ballard 7*, Chaska, Carver Co.

Anemone virginiana LINN. Spec. I, 540 (1753).

A. hirsuta MOENCH, Suppl. 105 (1802).
Abelemis petiolaris RAF. Herb. Par.

Wats. and Coult., Gray's Man. 6 ed. 37; Britt., Fl. N. J. 33; Webb., Fl. Neb. 117; Upham, Fl. Minn. 17; Chap., Fl. S. St. 5; Mac., Fl. Can. I, 13, 478; Cov., Fl. Ark. 162; Engl.-Prantl, Nat. Pflanz. 3, II, 61; Wats., Bibl. Ind. I, 6; Britt., N. Amer. Anem. 223.

North America: N. Br. to Rocky mts., B. C., Vancouver; N. to lat. 55°; S. to N. Eng., Va., Ohio, Iowa, E. Neb. and Kan.

Minn. valley: Throughout; forests, forest-openings and sunny banks of streams and lakes.

HERB.: *Arthur 163,* Vermilion lake?; *Sandberg 7,* Chisago Co.?; *Sandberg 8,* Cannon Falls?; *Hall 1,* Hennepin Co.! There seems to be some confusion between *A. virginiana* and *A. dichotoma* in the Minnesota collections. *Sandberg 9,* Red Wing, labelled *A. pennsylvanica* var. seems to be a deformed *A. virginiana. Taylor 424,* Janesville; *Hammond 6,* Lake City; *Herb. Wickersheim 6,* Idlewild, and *7,* Ash lake, Lincoln Co.; *Herb. Sheldon 1802,* Minneapolis; *Herb. Moyer 5,* Montevideo.

Anemone cylindrica A. GRAY, Ann. N. Y. Lyc. III, 221 (1836).

Wats. and Coult., Gray's Man. 6 ed. 37; Coult., Fl. Colo. 4; Britt., Fl. N. J. 33; Webb., Fl. Neb. 116; Upham, Fl. Minn. 17; Mac., Fl. Can. 13; Roth., Wheel. Exp. 56; Wats., Bibl. Ind. I, 3; Britt., N. Amer. Anem. 223.

North America: Q., Ott. to N. Eng.; W. to Rocky mts.; S. to Colo, Arizona, Neb., Kan., Mo., Iowa, Wisc., Ills. and Ohio; Brit. Col.

Minn. valley: Throughout on lower levels; in dry or sandy woodland and on banks of streams or lakes.

HERB.: *Taylor 780,* Glenwood; *Ballard 187,* Jordan; *Sheldon 742,* Sleepy Eye; *Sheldon 363,* Madison Lake; *Sheldon 1112,* Springfield; *Ballard 568,* Prior lake, Scott Co.; *Kassube 3,* Minneapolis; *Holzinger 1,* Winona; *Sandberg 5,* Goodhue Co.; *Sandberg 6,* Vasa; *Herb. Sheldon 1803,* Minneapolis; *Herb. Moyer 4,* Montevideo.

Anemone multifida POIR. Suppl. I, 364 (1810).

A. commersoniana DC. ex Deless. Ic. I, 4 (1820).
A. hudsoniana RICH. Frankl. Journ. ed. 2, Appx. 22 (1823).
A. globosa NUTT. ex Pritz. Linn. XV, 673 (1841).
A. sanguinea PURSH, ex Pritz. Linn. l. c. 672 (1841).
A. lanigera GAY, Fl. Chile I, 22 (1845).
A. narcissiflora HOOK. and ARN. Bot. Beech. 121 (1841) *not Linn.*

Wats. and Coult., Gray's Man. ed. 6, 37; Coult., Fl. Colo. 4; Webb., Fl. Neb. 117; Upham, Fl. Minn. 17; Brew. and Wats., Fl. Calif. I, 4; Mac., Fl. Can. I, 13, 478; Engl. Prantl, Nat. Pflanz. 3, II, 61; Roth., Wheel. Exp. 55; Wats., King Exp. 5; Wats., Bibl. Ind. I, 4; Britt., N. Amer. Anem. 222.

Chile to Magellan.

North America: Across continent in N. lat.; N. of arctic circle in E. Can.; N. Br.; Hudson Bay; Ft. Selkirk, 62° 45′ N., Alaska; Brit. Col.; S. to N. W. Nebr.; N. E. Maine, Lake Superior region, Minn., Dak., Saskatchewan, Colo., mts. of S. Colo. 11,000 ft. alt., Arizona.

Minn. valley: Reported near Mendota on the rocks at junction of Minnesota and Mississippi. Probably only far north in valley.

Anemone parviflora MICHX. Fl. N. Am. I, 319 (1803).

A. cuneifolia JUSS. Ann. Mus. III, 248 (1804).
A. trilobata PERS. Syn. II, 97 (1807).
A. borealis RICH. Frankl. Journ. ed. 2, app. 22 (1823).
A. cuneata SCHLECHT. Linn. V, 574 (1831).
A. tenella BANKS, ex Pritz. Linn. XV, 632 (1841).

Wats. and Coult., Gray's Man. 6 ed. 37; Coult., Fl. Colo. 4; Upham, Fl. Minn. 17; Mac., Fl. Can. I, 12, 477; Led., Fl. Ross. I, 16; Wats., Bibl. Ind. I, 5; Britt., N. Amer. Anem. 221; Rothr., Alask. 442.

Eastern Siberia.

North America: Lake Superior and Wisc. to mts. of Colo; N. to Labrador, Hudson Bay, Newf., Cape Chudleigh, Alaska; Isles of Berings Strait.

Minn. valley: Reported from Minneapolis and Ft. Snelling. Forest region in N. portions of the valley.?

Anemone caroliniana WALT. Fl. Car. 157 (1788).

A. tenella PURSH, Fl. Am. II, 387 (1814).
A. hartiana RAF. Neogen. 2 (1825).
A. decapetala AUCT. AMER. plur. *not* Ard.

Wats. and Coult., Gray's Man. 6 ed. 37; Chap., Fl. S. Sts. 4; Coult., Fl. Colo. 4; Webb., Fl. Neb. 116; Upham, Fl. Minn. 17; Coult., Fl. Tex. 8; Prantl, in Engl. Prantl, Nat. Pflanz. III, 2, 61; Wats., King Exp. 5; Cov., Fl. Ark. 162; Wats., Bibl. Ind. I, 3; Britt., Ann. N. Y. Acad. VI, 219.

North America: Ills., Minn., Neb. to Ga., Alab., La. and Tex.

Minn. valley: Prairies and forest openings throughout; most abundant E. and S.

HERB.: *Sheldon 1602*, Pipestone City; *Leiberg 1*, Blue Earth Co.; *Sandberg 3*, Red Wing; *Sandberg 4*, Cannon Falls; *Herb. Moyer 3*, Montevideo.

Anemone hirsutissima (PURSH).

Clematis hirsutissima PURSH, Fl. Am. 385 (1814).
Anemone ludoviciana NUTT. Gen. II, 20 (1818).
A. nuttalliana DC. Syst. I, 193 (1818).
A. nuttallii NUTT. Journ. Acad. Phil. 158 (1825).
Pulsatilla nuttalliana SPRENG. Syst. II, 663 (1825).
Anemone patens HOOK. Fl. Bor. Am. I, 4 (1830) *not* Linn.
Pulsatilla patens A. GRAY, Ill. Gen. I, 18 (1848) *not* Mill.
A. patens var. *nuttalliana* A. GRAY, Man. ed. 5, 36 (1867).
A. patens var. *hirsutissima* HITCHCOCK, Pl. Ames. 482 (1891).
Pulsatilla hirsutissima BRITT. Ann. N. Y. Acad. VI, 217 (1891).

Wats. and Coult., Gray's Man. 6 ed. 37; Coult., Fl. Colo. 3; Webb, Fl. Neb. 117; Upham, Fl. Minn. 17; Mac., Fl. Can. I, 12; Roth., Wheel. Exp. 55; Wats., Bibl. Ind. I, 5; ? Regel, Fl. O.-Sib. I, 21; Britt., N. Amer. Anem. 217; Rothr., Alask. 442.

Siberia: *A. wolfgangiana* (Bess.) Trautv. Pl. Sib. Bor. 9=our plant?

North America: Man., Mich., Ills. to Mo.; W. to Colo., Mont., Saskatchewan, Brit. Col., Coast range, Mackenzie, Alaska, beyond Arctic circle; alt. of 10,500 ft. in Colo.

Minn. valley; Prairies and forest openings throughout; most abundant E. and N.

HERB.: *Oestlund 2*, Ramsey Co.; *Sandberg 2*, Goodhue Co.; *Kassube 2*, Minneapolis; *Taylor 745*, Glenwood; *Sheldon 1188*, New Ulm; *Herb. Wickersheim 5*, Idlewild; *Herb. Univ. Hammond 7*, Lake City; *Herb. Sheldon 1685*, Minneapolis; *Sheldon 1827*, St. Paul; *Herb. Moyer 2*, Montevideo.

CLEMATIS LINN. Gen. 460 (1737).

Atragene LINN. Gen. 695 (1737).
Navarelia DC. Syst. Veg. I, 187 (1818).
Cheiropsis DC. l. c. (1818).
Meclatis SPACH, Suit. Buff. VII, 257 (1839).
Viorna PERS. Syn. I (1805).
Viticella MOENCH, Meth. (1794).
Flammula DC. l. c. (1818).

Baillon, *Hist. Pl.* I, 87; Benth. and Hook., *Gen. Pl.* I, 3: Engler and Prantl, *Nat. Pflanz.* 3, II, 62; Durand, *Ind. Gen. Phan.* 1: O. Kuntze, *Rev. Gen. Pl.* I, 2; Schenck, *Paleophyt.* 508; Gray, *Ill. Gen.* I, 13, 15.

Species: 200+ described; 66 (Kuntze); probably ±175; most temperate and tropical regions. Russia, 12; Europe, 8; European Russia, 5; N. America, 25; W. Tex., 5; Calif., 4; S. Sts., 9; E. Sts., 8; R. mts., 5; Can., 4; Pl. Wheel., 4–5; Pl. King, 3.

Fossil species: Pliocene or Quaternary of Japan (*Nathorst*); Tertiary of Europe (*Ettinghausen, Heer, A. Br.*).

Clematis virginiana LINN. Amoen. 4, 275 (1755).

Clematis cordata PURSH, Fl. Am. I, 384 (1814).

Wats. and Coult., Gray's Man. 6 ed. 35; Chap., Fl. So. St. 4; Webb., Fl. Neb. 117; Britt., Fl. N. J. 33; Upham, Fl. Minn. 17; Mac., Fl. Can. I, 11. Cov., Fl. Ark. 162; Wats., Bibl. Ind I, 11.

North America: N. S., N. Br., Q., Ont. to L. Winnipeg; S. in E. U. S. to Fla. and La.; W. to E. Neb., Ark. and N. Tex.

Minn. valley: Throughout; Fort Snelling; Shakopee; New Ulm; Morton; Glenwood; Swedes Forest; Morris; river banks, with underbrush.

HERB.: *Taylor 839*, Glenwood; *Sheldon 939*, Redwood Falls; *Ballard 628*, Chaska; *Ballard 226*, Jordan; *Sheldon 730*. Sleepy Eye; *Ballard 750*, Waconia; *Herrick 1*, Minneapolis;

Roberts 1, Sawtooth range; *Oestlund 1,* Minneapolis; *Kassube 1,* Minneapolis; *Roberts 2,* Baptism river; *Sandberg 1,* Red Wing; *Herb. Moyer 1,* Montevideo.

OXYGRAPHIS BUNGE, Fl. Atl. Suppl. 46 (1836).

Cyrtorrhynca NUTT. T. and G. Fl. I, 26 (1838).

Benth. and Hook., *Gen. Pl.* I, 6; Baillon, *Hist. Pl.* I, 39; Durand, *Ind. Gen. Phan.* 2; Engler and Prantl, *Nat. Pflanz.* 3, II, 63.

Living species: 9+; Central and Eastern Asia and N. America. Asia, 7; North America, 3?.

Oxygraphis cymbalaria (PURSH) PRANTL, Engl. Prantl, Nat. Pflanz. III, 2, 63 (1889).

Ranunculus cymbalaria PURSH, Fl. Am. I, 392 (1814).
R. tridentatus HBK. Nov. Gen. et Spec. V. 42 (1821).
R. sarmentosus ADANS. Mem. Mosc. IX, 244 (1839).

Wats. and Coult., Gray's Man. ed. 6, 41; Webb., Fl. Neb. 116; Britt., Fl. N. J. 36; Coult., Fl. Colo. 7; Brew. and Wats., Fl. Calif. I. 7.; Upham, Fl. Minn. 18; Regel, Fl. O.-Sib. I, 42; Mac., Fl. Can. I, 17; Forbes and Hems., Fl. Sin. I, 14; Led., Fl. Ross. I, 34; Coult., Fl. Tex. 8; Roth, Wheel. Exp. 5, 56, 354; Wats., King Exp. 7; Wats., Bibl. Ind. I, 18.

Europe; Altai and Baikal Siberia; China; S. Asia.

North America: N. J., Gt. lakes and S. Ills.; N. through Can.; Minn., Neb. to Colo. and Pac. coast; Rocky mts. far N. and S.; Rio Grande river; in sandhills of Nebraska and frequenting sandy regions along the coast, elsewhere more common in the vicinity of saline or alkaline marshes.

Minn. valley: Throughout, but principally in forest region; sandy banks, lake shores and saline grounds.

HERB: *Taylor 746,* Glenwood; *Sheldon 442,* Buffalo Lake, Waseca Co.; *Sheldon 1186,* New Ulm; *Taylor 227a,* Janesville; *Sheldon 763,* Sleepy Eye; *Taylor 638,* Minnesota Lake; *Ballard 652,* Chaska; *Sheldon 1356,* Lake Benton; *Ballard 36,* Chaska; *Holzinger 8,* Goodhue Co.; *Herb. Moyer 18,* Milan, Chippewa Co.

RANUNCULUS LINN. Gen. 464 (1737).

Batrachium SPACH, Suit. Buff. VII, 199 (1839).
Pachyloma SPACH, l. c. 194 (1839).
Cyprianthe SPACH, l. c. 220 (1839).
Ceratocephalus MOENCH, Meth. 218 (1794).
Xiphocoma and **Gampsoceras** STEV. Bull. Mosc. (1852).
Hecatonia and **Krapfia** DC. Syst. Veg. I, 227, 228 (1818).
Casalea and **Aphanostemma** ST. HIL. Fl. Bras. I, 8, 12 (1825).
Ficaria DILL. Nov. Gen. Giess. 108 (1719).

Baillon, *Hist. Pl.* I, 86; Benth. and Hook., *Gen. Pl.* I, 5, 953; Engler and Prantl, *Nat. Pflanz.* 3, II, 64; Durand, *Ind. Gen. Phan.* 2; O. Kuntze, *Rev. Gen. Pl.* I, 3; Gray, *Ill. Gen.* I, 29; Schenck, *Palaeophyt.* 508.

Living species: 250+; 160 (B. and H.); 200 (Durand); cosmopolitan, but richest in northern, extra-tropical regions; Russia, 70; Europe, 91; European Russia, 37; North America, 60+; Canada, 42–47; Calif., 20–24; E. Sts, 18; Rocky mts., 22; S. Sts., 15; W. Tex., 8; Pl. Wheel., 18; Pl. King, 20.

Fossil species: 1; Tertiary of Europe (*Heer*).

Ranunculus pensylvanicus LINN. f. Suppl. 272 (1781).

R. canadensis JACQ. Misc. 11, 343 (1778).
R. trifolius MOENCH, Suppl. 70 (1802).
R. hispidus PURSH, Fl. Am. I, 395 (1814).
R. hirsutus CURT. Eat. Man. IV, 424 (1825) ?

Wats. and Coult., Gray's Man. 6 ed. 43; Britt., Fl. N. J. 37; Webb., Fl. Neb. 116; Chap., Fl. S. St. 8; Coult., Fl. Colo. 8; Mac., Fl. Can. I, 21; Forbes and Hems., Fl. Sin. I, 14; Cov., Fl. Ark. 163; Wats., Bibl. Ind. I, 22.

China.

North America: N. S., N. Br., Ont. to Brit. Col. and Pac.; N. in arctic circle; S. to N. Eng., N. J., Penn. and Va.; W. to Minn., Dak., Neb., Colo. Mont.; B. Col. to Oregon.

Minn. valley: Forest region, especially E. and N. in valley; damp woodland and openings.

HERB.: *Ballard 812*, Page lake, Carver Co.; *Ballard 695*, Waconia; *Ballard 737*, Waconia; *Sheldon 1255*, Lake Benton; *Taylor 115*, Janesville; *Ballard 489*, Prior's lake, Scott Co.; *Taylor 827*, Glenwood; *Ballard 532*, Cleary's lake, Scott Co.; *Taylor 981*, Glenwood; *Oestlund 5*, Hennepin Co.; *Herrick 13*, Minneapolis; *Roberts 4*, Grand Marais; *Roberts 5*, Duluth; *Holzinger 7*, Winona Co.; *Bailey 71*, Vermilion lake; *Sandberg 28*, Red Wing; *Herb. Moyer. 12*, Montevideo.

Ranunculus repens LINN. Spec. 779 (1753).

R. prostratus POIR. Enc. Meth. VI, 113 (1804).
R. tomentosus POIR. Enc. Meth. VI, 127 (1804).
R. intermedius EAT. Man. ed. 3, 424 (1822).
R. clintoni BECK, Bot. 9 (1833).

Wats. and Coult., Gray's Man. 43; Britt., Fl. N. J. 37; Hook., Fl. Gt. Brit. 9; Mac., Fl. Can. I, 21, 481; Forbes and Hems., Fl. Sin. I, 16; Led., Fl. Ross. I, 44, 733; Nym., Fl. Eur.; Herd., Fl. Eur. Russ., 10; Coult., Fl. Tex. 8; Wats., King Exp. 9; Wats., Bibl. Ind. I, 22; Hart., Fl. Scand. I, 163.

Northern Eur. and Africa; Siberia and China.

North America: Introduced eastward, but probably indigenous west of the great lakes; Ont. to Brit. Col.; S. to Tex., Arizona, Minn., Iowa, Ohio.

Minn. valley: Plants of the true *R. repens* have been found at Ft. Snelling, where the species is possibly indigenous. Habitat like that of *R. septentrionalis* Poir. This is undoubtedly a rare plant in the Minn. valley.

HERB.: *? Herrick 15*, Minneapolis; *? Sandberg 32*, Red Wing.

Ranunculus septentrionalis POIR. Enc. Meth. VI, 123 (1804).

R. hispidus MICHX. Fl. N. Am. I, 321 (1803).
R. marilandicus POIR. Enc. Meth. VI, 126 (1804).
R. nitidus MUHL. Cat. ed. 2, 56 (1818).
R. carolinianus DC. Syst. 1, 292 (1818).
R. schlechtendahlii HOOK. Fl. Bor.-Am. I, 21 (1833).
R. repens LINN. var. *hispidus* T. and G. Fl. I, 658 (1838).
R. repens LINN. var. *nitidus* T. and G. Fl. I, 658 (1838).
R. repens Auct. Amer. in part.

Wats. and Coult., Gray's Man. ed. 6, 43; Britt., Fl. N. J. 37; Coult., Fl. Colo. 8; Chap., Fl. S. St. 8; Brew. and Wats., Fl. Calif. 8; Upham, Fl. Minn. 19; Mac., Fl. Can. I, 21, 22; Nym., Fl. Eur.; Led., Fl. Ross. I, 44; Griseb., Fl. W. I.; Wats., King Exp. 9; Mac., Fl. Can. II, 298; Herd., Fl. Eur. Ross. 10; Coult., Fl. Tex. 9; Cov., Fl. Ark. 163; Wats., Bibl. Ind. I, 23.

Europe; Mid. Russ.; Siberia; Kamtk.

North America: Anticosti; N. S., N. Br. to Hudson Bay and Pac.; N. to lat. 67°; across the cont. southward; Atl. to Tex. and in Rocky mts. to lat. 52°. It is not clear that the foreign plant is this species. The long confusion with *R. repens* makes the accurate separation of the two plants a task which can not be undertaken without abundant material from the different regions.

Minn. valley: Most of what has passed for *R. repens* Linn. and all of *R. repens* Linn. var. *hispidus* (Michx.) is undoubtedly this species. Moist and shady places or wet meadows; damp woodland and near springs.

HERB.: *Ballard 174*. Shakopee; *Sandberg 31*, White Rock; *Kassube 13*, Minneapolis; *Herrick 14*, Minneapolis; *Herb. Moyer 13*, Montevideo; *14*, Montevideo; *15*, Montevideo; *16*, Milan, Chippewa Co.; *Herb. Sheldon 1774*, Ft. Snelling.

Ranunculus fascicularis MUHL. Bigel. Fl. Bost. 137 (1814).

Wats. and Coult., Gray's Man. 6 ed. 43; Britt., Fl. N. J. 37; Upham, Fl. Minn. 19; Mac., Fl. Can. I, 18; Coult., Fl. Tex. 9; Wats., King Exp. 9; Cov., Fl. Ark. 162; Wats., Bibl. Ind. I, 18.

North America: Ont. to L. Winnipeg; E. U. S. to Va.; W. to Minn., Mo., Ark., Tex.

Minn. valley: Hills and banks in more exposed localities; Ft. Snelling and probably westward to New Ulm.

HERB.: *Sandberg 29*, Vasa; *Sandberg 30*, Cannon Falls; *Herb. Sheld. 1678*, Minneapolis; *1822*, Minneapolis.

Ranunculus recurvatus POIR. Enc. Meth. VI, 123 (1804).

R. lanuginosus WALT. Fl. Car. 157 (1788).
R. saniculaeformis MUHL. Cat. 56 (1813).
R. leptopetalus RAF. Fl. Lud. 83 (1817).
R. fascicularis SPRENG. Neu. Entd. I, 228 (1820).

Wats. and Coult., Gray's Man. 6 ed. 43; Britt., Fl. N. J. 37; Webb., Fl. Neb. 116; Chap., Fl. S. St. 8; Upham, Fl. Minn. 19; Mac., Fl. Can. I, 19, 480; Led., Fl. Ross. I, 44; Rothr., Wheel. Exp. 58; Cov., Fl. Ark. 163; Wats., Bibl. Ind. I, 22.

Arctic islands off the coast of N. E. Siberia.

North America: Labrador, N. S., N. Br., Q , Ont. to L. Winnipeg; S. along Atl. coast; W. to Minn., Neb., Mo. and Ark.

Minn. valley: Forest region; E. and N. in valley; woods and shaded banks.

HERB.: *Ballard 147*, Chaska; *Sandberg 27*, Chisago Co.; *Leiberg 3*, Blue Earth Co.; *Kassube 12*, Minneapolis; *Herb. Sheld. 1819*, Ramsey Co.

Ranunculus sceleratus LINN. Spec. 776 (1753).

Wats. and Coult., Gray's Man. 6 ed. 42; Britt., Fl. N. J. 37; Webb., Fl. Neb. 116; Upham, Fl. Minn. 19; Chap., Fl. S. St. 8; Coult., Fl. Colo. 7; Hook., Fl. Gt. Brit. 9; Mac., Fl. Can. I, 19; Forbes and Hems., Fl. Sin. I, 16; Led., Fl. Ross. I, 45; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 10; Engl. Prantl, Nat. Pflanz. III, 2, 65; Brew. and Wats., Fl. Calif. I, 426; Roth., Wheel. Exp. 57; Wats., King Exp. 8; Cov., Fl. Ark. 163; Wats., Bibl. Ind. I, 23; Hart., Fl. Scand. I, 165.

Northern Eur.; N. Asia to India and Bengal; China; Siberia.

North America: Maritime provinces of Can. to Brit. Col., Peace river and lat. 67° N.; S. throughout U. S.

Minn. valley: Banks of streams; ditches; wet spring sides, N. E. and S. in valley, extending far W. on lower levels.

HERB.: *Sheldon 701*, Waseca—*dwarf form; Ballard 47*, Chaska; *Ballard 474*, Prior's lake, Scott Co.; *Sheldon 183*, Eagle lake, Blue Earth Co.; *Taylor 506*, Minnesota lake; *Ballard 324*, Belle Plain; *Kassube 14*, Minneapolis; *Herrick 16*, Minneapolis; *Oestlund 6*, Hennepin Co.; *Sandberg 33*, Vasa; *Herb. Moyer 17*, Montevideo.

Ranunculus abortivus LINN. Spec. 551 (1753).

R. nitidus WALT. Fl. Car. 159 (1788).

Wats. and Coult., Gray's Man. ed. 6, 42; Coult., Fl. Colo. 7; Webb., Fl. Neb. 116; Britt., Fl. N. J. 36; Chap., Fl. S. St. 7; Upham, Fl. Minn. 19; Mac., Fl. Can. I, 18; Cov., Fl. Ark. 162; Wats., Bibl. Ind. I, 15.

North America: Man. to Brit. Col.; in U. S., Atl. coast to Rocky mts.

Minn. valley: Forest region and wooded banks; openings and moist soil, especially E. in valley.

HERB.: *Ballard 125*, Chaska; *Taylor 275*, Janesville; *Sheldon 140*, Madison Lake; *Sheldon 36*, Elysian; *Herrick 12*, Minneapolis; *Holzinger 6*, Winona Co.; *Kassube 11*, Minneapolis; *Sandberg 26*, Red Wing; *Roberts 3*, Black Point; *Oestlund 4*, Minneapolis; *Herb. Sheld. 1820*, Minneapolis.

Ranunculus abortivus LINN. var. **micranthus** (NUTT.) GRAY, Man. 5 ed. 42 (1867).

R. micranthus NUTT. T. and G. Fl. I, 18 (1838).

Wats. and Coult., Gray's Man. 6 ed. 42; Britt., Fl. N. J. 36; Upham, Fl. Minn. 19; Mac., Fl. Can. I, 18, 480; Cov. Fl. Ark. 162; Wats. Bibl. Ind. I, 15.

North America: Eastern Canadian provinces? N. shore of Lake Superior to Brit. Col.; Mass. and N. J, to Minn., Dak, and Colo.

Minn. valley: With typical form, especially W. and S. W.; apparently less abundant than the type.

HERB.: *Moyer 11*, Montevideo.

Ranunculus ovalis RAF. Journ. Bot. 268 (1814).

R. rhomboideus GOLDIE. Edin. Phil. Journ. VI, 329 (1822).

R. brevicaulis HOOK. Fl. Bor.-Am. I, 13 (1833).

Wats. and Coult, Gray's Man. 6 ed. 42; Coult., Fl. Colo. 7; Webb., Fl. Neb. 116; Upham, Fl. Minn. 19; Mac., Fl. Can. 17; Wats., Bibl. Ind I, 23.

North America: Q. to Man. and Brit. Col.; N. in Rocky mts. to lat 52°; S. to Mich., Ills, Wisc., Minn. and N. and W. Neb.

Minn. valley: Low prairies and near edges of sloughs; valley throughout; principally N. E. and S..

HERB.: *Sheldon 942*, Redwood Falls; *Menzel 1*, Pipe stone City; *Kassube 10*, Minneapolis; *Leiberg 2*, Blue Earth Co.?; *Sandberg 24*, Red Wing; *Sandberg 25*, Cannon Falls; *Herb. Sheld. 1679*, Minneapolis; *1821*, Ft. Snelling; *Herb. Moyer 9*, Montevideo; *10*, Montevideo.

Ranunculus pedatifidus SM. Rees Cycl. 72 (1819).

R. affinis R. BR. Parr. 1st Voy. Appx. 265 (1823).

R. amoenus LED. Fl. Alt. I, 320 (1829).

R. auricomus var. *affinis* LAWSON, Ran. Can. (1876).

Wats. and Coult., Gray's Man. 6 ed. 42; Coult., Fl. Colo. 8; Upham, Fl. Minn. 19; Mac., Fl. Can. I, 18; Led., Fl. Ross. I, 37; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 10; Roth., Wheel. Exp. in var. 57; Wats., King Exp. 7; Wats., Bibl. Ind. I, 15.

Europe; Altai, Baikal and Transbaik. Siberia.

North America: Greenland, Melville Isl. to Rocky mts., 52° N. lat., Brit. Col. and N. W. T.; S. in mts. to Colo. and

Nevada; E. from Montana to Minn., Iowa and Canada; Hudson strait.

Minn. valley: S. and S. W. in valley; damp woodland and near springs. Rather rare.

HERB.: *Sheldon 781*, Sleepy Eye; *Taylor 431*, Janesville; *Sheldon 1568*, Lake Benton; *Sheldon 1189*, New Ulm.

Ranunculus reptans LINN. Spec. 549 (1753).

R. filiformis MICHX. Fl. N. Am. I, 320 (1803).
R. reptans var. *filiformis* DC. Syst. 1, 248 (1818).
R. flammula LINN. var. *reptans* E. MEYER, Pl. Lab. 96 (1830).
R. flammula var. *filiformis* HOOK. Fl. Bor.-Am I, 11 (1833).

Wats. and Coult., Gray's Man. 6 ed. 42; Britt., Fl. N. J. 36; Coult., Fl. Colo. 6; Brew. and Wats., Fl. Calif. I, 6; Upham, Fl. Minn. 18; Mac., Fl. Can. I, 17; Nym., Fl. Eur.; Mac., Fl. Can. II, 297; Herd., Fl. Eur. Russ. 10; Roth, Wheel. Exp. 56; Wats., King Exp. 7; Wats., Bibl. Ind. I, 18; Led., Fl. Ross. I, 32; Trautv., Fl. Sib. 9; Hart., Fl. Scand. I, 161.

Scotland; N. Eur.; Siberia.

North America: Greenland and Nova Scotia to Brit. Col. and Coast range; S. in Calif. at alt. 6,000 ft.; local in Colo.; S. to Minn., Iowa, New Eng., N. J., Penn., Ohio and Ills.

Minn. valley: Forest region, especially N. and S. E.; gravelly or sandy beaches of lakes and streams.

HERB.: *Sheldon 214*, Lake Ballentyne, Blue Earth Co.; *Sheldon 102*, Elysian; *Ballard 829*, Page Lake, Carver Co.; *Herrick 9*, Minneapolis; *Herrick 10*, Excelsior; *Bailey 1000*, White Bear lake; *Sandberg 22*, Chisago Co.; *Sandberg 23*, Chisago Co.; *Herrick 11*, Minneapolis; *Kassube 9*, Cedar lake, Hennepin Co.

Ranunculus ambigens S. WATS. Ind. N. A. Bot. 16 (1878).

? *R. lingua* PURSH, Fl. Am. 391 (1814).
R. flammula PURSH, Fl. Am. 391 (1814) *not* DC.
? *R. robini* RAF. Fl. Lud. 82 (1817).
R. alismaefolius GRAY, Man. 2d ed. 8 (1852).

Wats. and Coult., Gray's Man. 6 ed. 41; Chap., Fl. S. St. 7; Britt., Fl. N. J. 63; Brew. and Wats. Fl. Calif. I, 6?; Mac., Fl. Can. I, 16, 480; Wats., King Exp. 7?; Wats. Bbl. Ind. I, 16.

Europe?

North America: N. Eng. to Minn., Dak., Brit. Col., Vancouver; S. to N. J., Ohio, Tenn.; southward.

Minn. valley: Reported from the lake region of Alexandria and probably N. in valley; rare; in wet mud.

Ranunculus lacustris BECK and TRACY, Eat. Man. ed. 3 423 (1822).

R. multifidus PURSH, Fl. Am. I, 736 (1814) *not* Forsk.
R. multifidus BIGEL. Fl. Bost. ed. 2, 228 (1824)?

R. fluviatilis BIGEL. Fl. Bost. 139 (1840) *not* Willd.
R. purshii RICH. Frankl. Journ. 13 (1823).
R. limosus NUTT. T. and G. Fl. I, 20 (1838).
R. radicans C. A. M. var. *multifidus* REGEL, Fl. Ost Sib. I, 45 (1862).

Wats. and Coult., Gray's Man. 6 ed. 41; Britt., Fl. N. J. 36; Webb., Fl. Neb. 116; Upham, Fl. Minn. 18; Coult., Fl. Colo. 9; Mac., Fl. Can. I, 16; Engl. Prantl, Nat. Pflanz. III, 2, 65; Brew. and Wats., Fl. Calif. I, 426; Wats., King Exp. 8; Roth, Wheel. Exp. 57,? Cov., Fl. Ark. 163; Wats., Bibl. Ind. I, 20; Rothr., Alask. 442.

Siberia.

North America: Cape Breton Isles. to Pac.; N. S. to N. W. T. and Alaska; S. to N. Eng., N. J., Penn., Ohio, Iowa, Mo., Minn. and Colo.; Utah and Calif.

Minn. valley: Throughout in ponds, lakes and sluggish streams.

HERB.: *Ballard 10*, Chaska; *Sheldon 437*, Buffalo lake, Waseca Co.; *Ballard 430*, Prior's lake; *Sheldon 441*, Smith's Mills, Blue Earth Co.; *Sheldon 257*, Turtle lake, Le Sueur Co.; *Taylor 731*, Glenwood; *Sandberg 20*, Chisago lake; *Kassube 8*, Minneapolis; *Herrick 8*, Minneapolis; *Sandberg 21*, Red Wing; *Arthur 95*, Vermilion lake; *Herb. Wickersheim 9*, Norwegian creek, Lincoln Co.

Ranunculus lacustris BECK and TRACY, var. **terrestris** (GRAY).

R. multifidus var. *terrestris* GRAY, Man. ed. v. 41 (1867).

Wats. and Coult., Gray's Man. 6 ed. 41; Mac., Fl. Can. I, 16, II, 297.

North America: N. Ohio; Ills., Minn., Man. to Saskatchewan, Dak., N. W. T. and Brit. Col.

Minn. valley: Forest district; rooting in mud near pools or ponds.

HERB.: *Sheldon 10*, Waterville, Le Sueur Co.; *Bailey 95a*, Vermilion lake; *Bailey 441*, Fall lake.

Ranunculus aquatilis LINN. var. **trichophyllus** (CHAIX.) GRAY, Man. 5 ed. 40 (1867).

R. trichophyllus CHAIX. Vill. Dauph. I, 336 (1786).
R. fluviatilis PURSH, Fl. Am. I, 395 (1814.)
R. aquatilis var. *capillaceus* DC. Prodr. I, 26 (1824).
R. hydrocharis trichophyllus HIERN. Seem. Journ. Bot. IX, 101 (1871).

Wats. and Coult., Gray's Man. 6 ed. 40; Coult., Fl. Colo. 6; Webb., Fl. Neb. 116; Britt., Fl. N. J. 35; Chap., Fl. S. St. 7; Upham, Fl. Minn. 18; Brew. and Wats., Fl. Calif. I, 5; Hook., Fl. Gt. Brit. 6; Mac., Fl. Can. I, 16; Forbes and Hems., Fl. Sin. 13; Herd., Fl. Russ. Eur. 8; Engl. Prantl, III, 2, 65; Wats., King. Exp. 5; Roth., Wheel. Exp. 354; Wats., Bibl. Ind. I, 17; Hart., Fl. Scand. I, 167.

Europe; W. Asia; China; Himalayas; Australia; almost cosmopolitan.

North America: Greenland to Brit. Col. in Can.; U. S. across the continent; mts. of Utah to 6,000 ft. alt.

Minn. valley: Abundant throughout in ponds, lakes and sluggish streams.

HERB.: *Ballard 170,* Shakopee; *Sheldon 317,* Madison Lake; *Sheldon 1152,* New Ulm; *Sheldon 1136,* Springfield; *Sheldon 722,* Sleepy Eye; *Ballard 277,* Jordan; *Holzinger 5,* Lake Winona; *Huntington 1,* Rock Co.; *Sandberg 19,* Cannon Falls; *Herb. Wickersheim 8,* Lake Stay, Lincoln Co.; *Herb. Moyer 8,* Granite Falls.

Ranunculus aquatilis LINN. var. **caespitosus** DC. Prodr. I, 26 (1824).

R. hydrocharis caespitosus HIERN. Seem. Journ. Bot. IX, 65 (1871).

Wats. and Coult., Gray's Man. 6 ed. 41; Wats., Bibl. Ind. I, 17; Mac., Fl. Can. I, 16.

North America: Ont. to Ill., Minn., Dak. and Saskatchewan.

Minn. valley: S. and S. W. districts; pools of stagnant water and rooting in the mud.

HERB.: *Sheldon 818,* Cottonwood river, near Sleepy Eye; *Sheldon 1134,* Cottonwood river, Springfield; *Sheldon 317,* Duck lake, Blue Earth Co.; *Sheldon 354,* Lake Madison, Blue Earth Co.; *Sheldon 435,* Lake Elysian, Waseca Co.; *Sheldon 1452,* Pipestone.

Ranunculus circinnatus SIBTH. Fl. Oxon. (1794).

R. aquatilis LINN. var. *stagnatilis* DC. Prodr. I, 26 (1824).
R. divaricatus GRAY, Pl. Wright, II, 8 (1852).

Wats. and Coult., Gray's Man. 6 ed. 40; Upham, Fl. Minn. 18; Coult, Fl. Colo. 6; Mac., Fl. Can. I, 16; II, 296; Wats, Bibl. Ind. I, 17; Wats., King Exp. 6; Hook., Fl. Gt. Brit. 6; Nym., Fl. Eur.; Hart, Fl. Scand. I, 168; Webb., Appx. Neb. 30.

W. Europe (local).

North America: Man. to Rocky mts. and Brit. Col.; S. to Vt., Maine, Iowa, Dak., Neb., Colo., Nev. and Oregon.

Minn. valley; Reported from Mankato and Alexandria; probably local in the forest lakes of the valley.

HERB.: *Bailey 318,* Vermilion lake.

THALICTRUM LINN. Gen. 461 (1737).

Physocarpum SPACH, Suit. Buff. VII, 237 (1839).
Tripterium SPACH, l. c. (1839).

Baillon, *Hist. Pl.* I, 87; Benth. and Hook., *Gen. Pl.* I, 4; Engler and

Prantl, *Nat. Pflanz.* 3, II, 66; Durand, *Ind. Gen. Phan.* 1; O. Kuntze, *Rev. Gen. Pl.* I, 4; Gray, *Ill. Gen.* I, 23.

Living species: 76±; 50 (B. and H.); 70 (Durand); Europe; Asia; Africa; N. and S. America; extra-tropical. Russia, 28; Europe, 26; European Russia, 12; North America, 14-16; Canada, 9; S. Sts., 6; E. Sts., 4; W. Tex.; 3; Rocky mts., 5; Calif., 4; Pl. Wheel., 2; Pl. King, 4.

Thalictrum purpurascens LINN. Spec. 546 (1753).

T. rugosum AIT. Hort. Kew. 2, 262? (1811).
T. pubescens PURSH, Fl. Am. I, 388 (1814).
T. revolutum DC. Syst. I, 173 (1818).
T. cornuti T. and G. Fl. I, 38 (1838).

Wats. and Coult., Gray's Man. 6 ed. 39; Britt., Fl. N. J. 35; Webb., Fl. Neb. 117; Upham, Fl. Minn. 18; Mac., Fl. Can. I, 14, 479; II, 298: Cov., Fl. Ark. 162; Coult., Fl. Tex. 7; Wats., Bibl. Ind. I, 26.

North America: N. S., Anticosti, Q., Ont. to N. Eng., N. J., Md.; W. to Minn., Dak., Neb., Mo. and Ark., W. Tex.

Minn. valley: Throughout in forest region and on wooded banks, with *T. dioicum*; rather more abundant, especially westward. This species has been mistaken for *T. polygamum.*

HERB.: *Sheldon 1299,* Lake Benton; *Ballard 373,* Helena, Scott Co.; *Ballard 162,* Chaska; *Taylor 331,* Janesville; *Sheldon 767,* Sleepy Eye; *Taylor 571,* Minnesota lake; *Taylor 843,* Glenwood; *Taylor 1721,* Janesville; *Sheldon 968,* Sleepy Eye; *Herrick 6,* Minneapolis; *Sandberg 18,* Cannon Falls; *Gedge 1,* Glyndon; *Herrick 7,* Minneapolis; *Bailey 460,* Agate Bay; *Arthur 68,* Vermilion lake; *Bailey 448,* Mud river; *Herb Sheld. 1735,* Minneapolis; *Herb. Moyer 7,* Montevideo.

Thalictrum dioicum LINN. Spec. 545 (1753).

T. laevigatum MICHX. Fl. N. Am. I, 322 (1803).

Wats. and Coult., Gray's Man. 6 ed. 39; Britt., Fl. N. J. 35; Chap., Fl. S. St. 5; Upham, Fl. Minn. 18; Mac., Fl. Can. I, 14, 479; Engl. Prantl, Nat. Pflanz. III, 2, 66; Wats., Bibl. Ind. I, 25.

North America: N. Br., Anticosti and N. S. to Pac.; N. to lat. 67°; S. to Minn., Ohio, and in Appallachians to N. Car.

Minn. valley: Forest region, in dry localities, throughout; wooded banks and openings.

HERB.: *Sheldon 237,* Turtle lake, Le Sueur Co.; *Sheldon 50,* Elysian; *Taylor 33,* Elysian; *Oestlund 3,* Ramsey Co.; *Sandberg 15,* Red Wing; *Sandberg 16,* Vasa; *Sandberg 17,* Cannon Falls; *Herb. Sheld. 1824,* Hennepin Co.; *Herb. Moyer 6,* Montevideo.

XLII. BERBERIDACEAE. Barberry Family.

Endlicher, *Gen. Pl.* 852 (1840); Benth. and Hook., *Gen. Pl.* I, 40 (1862); Prantl, *in Engler and Prantl, Nat. Pflanz.*3, II, 70 (1888).

Genera: 8; principally extra-tropical regions of N. hemisphere and centering on the Pacific coast regions of the Old and New worlds; a few in tropical Asia and the Andes district.

Species: 135; 75 per cent. in genus *Berberis.*

PODOPHYLLUM Linn. Gen. 426 (1737).

Anapodophyllum Tourn. Inst. 239 (1700).

Baillon, *Hist. Pl.* III, 75; Benth. and Hook., *Gen. Pl.* I, 45; Durand, *Ind. Gen. Phan.* 10; Engler and Prantl, *Nat. Pflanz.* 3, II, 74; Gray, *Ill. Gen.* I, 87.

Living species: 5; 2 (Durand); North America and Japan, 1; Himalayas, 1; S. China and Formosa, 2–3.

Podophyllum peltatum Linn. Spec. 505 (1753).

Anopodophyllum peltatum Moench, Meth 277 (1794).

P odophyllum callicarpum Raf. Fl. Lud. 14 (1817).

P. montanum Raf. Med. Fl. II, 59 (1830).

Wats. and Coult., Gray's Man. 6 ed. 54; Britt., Fl. N. J. 42; Webb., Fl. Neb. 115; Chap., Fl. S. St. 18; Upham, Fl. Minn. 21; Mac., Fl. Can. I, 30; Engl. Prantl, Nat. Pflanz. III, 2, 74; Cov , Fl. Ark. 164; Wats., Bibl. Ind. I, 35.

Japan.

North America: N. Eng. and Ont. to Fla.; W. to Minn., Neb., Kan. and Ark.

Minn. valley: S. E. region only; rich woodlands, not common.

Herb.: *Sheldon 7,* Faribault; *Sandberg 43,* Pine Island

LEONTICE Linn. Gen. 268 (1737).

Bongardia C. A. M. Verz. Pfl. Cauc. (1831).

Gymnospermium Spach, Suit. Buff. VIII, 66 (1839).

Caulophyllum Michx. Fl. Bor. Am. I, 204 (1803).

Leontopetalum Tourn. Corr. 484 (1703).

Baillon, *Hist. Pl.* III, 74; Benth. and Hook., *Gen. Pl.* I, 43; Engler and Prantl, *Nat. Pflanz.* 3, II, 76; Durand, *Ind. Gen. Phan.* 10; Gray, *Ill Gen.* 81.

Living species: 10–12; 5–6 (B. and H.); 10 (Durand) S. Europe, middle Asia, Manchuria, Japan and North America

Leontice thalictroides Linn. Spec. 312 (1753).

Caulophyllum thalictroides Michx. Fl. N. Am. I, 205 (1803).

Wats. and Coult., Gray's Man. 6 ed. 53; Britt., Fl. N. J. 42; Chap., Fl. S. St. 17; Upham, Fl. Minn. 21; Mac., Fl. Can. I, 30, 483; Wats., Bibl. Ind. I, 35; Engl. Prantl, Nat. Pfianz. III, 2, 76; Webb., Appx. Neb. 30.

Japan and Manchuria.

North America: N. Br., Q., Ont. to N. Y., N. J., Penn. and S. Car. W. to Ohio, Minn., Neb. and Man.

Minn. valley: Throughout in deep woodland, especially along streams and near lakes.

HERB. *Sheldon 802,* Sigel township, Brown Co.; *Taylor 890,* Glenwood; *Sheldon 142,* Madison Lake; *Sheldon 54,* Elysian; *Ballard 76,* Chaska; *Kassube 18,* Minneapolis; *Leiberg 6,* Blue Earth Co.; *Holzinger 11,* Winona Co.; *Sandberg 42,* Red Wing; *Herb. Sheld. 1714,* Minneapolis; *1862,*Ramsey Co.; *Herb. Wickersheim 10,* Ash lake, Lincoln Co.; *Herb. Moyer 24,* Carlton lake, Chippewa Co.

XLIII. MENISPERMACEAE. Moon-Seed Family.

Endlicher, *Gen. Pl.* 825 (1840); Benth. and Hook., *Gen. Pl.* I, 30 (1862); Prantl, *Engler and Prantl, Nat. Pflanz.* 3, II, 78 (1888).

Genera: 56-58 living; 5–6 extinct; tropics and sparingly without, especially in the S. hemisphere; in the Tertiary widely distributed over the N. hemisphere.

Species: 300 (*Miers*); 80 (B. and H.); perhaps 150 distinct; Cretaceous and Tertiary forms abundant in N. America and Tertiary forms in Europe, where there are now few living representatives.

MENISPERMUM LINN. Gen. 107 (1737).

Trilophos FISCH. Ann. Sci. Nat. (1835).

? Selwynnia F. MULL. Fragm. IV, 153 (1861?).

Baillon, *Hist. Pl.* III, 33; Benth. and Hook., *Gen. Pl.* I, 37, 962; Durand, *Ind Gen. Phan.* 8; Gray, *Ill, Gen.* I, 73; Schenck, *Paleophyt.* 500.

Living species: 3. Japan, 1; Centr. and E. Asia, 1; North American Atl. forest region, 1.

Fossil species: *Menispermites* (*Lesquerx.*) about 10 species from the Dakota, Cretaceous (upper) and 5–6, Eocene North America.

Menispermum canadense LINN. Spec. 340 (1753).

Cissampelos smilacina LINN. Spec. 2 ed. 1473 (1762).

M. angulatum MOENCH, Meth. 277 (1794).

M. smilacinum DC. Syst. I, 541 (1818).

Wats. and Coult., Gray's Man. 6 ed. 51; Britt., Fl. N. J. 42; Webb. Fl. Neb. 115; Upham, Fl. Minn. 21; Chap., Fl. S. St. 16; Mac., Fl. Can. I, 29; Cov., Fl. Ark. 163: Wats., Bibl. Ind. I, 32.

North America: Q., Ont. and Man.; N. U. S. to N. Eng., N. J and N. Car.? W. to Dak., Minn., Neb. and Ark.

Minn. valley: Throughout; wooded banks of lakes and streams, climbing over shrubbery.

HERB.: *Taylor 980*, Glenwood; *Ballard 102*, Chaska; *Sheldon 30*, Elysian; *Sheldon 636*, Wilton, Waseca Co.; *Taylor 707*, Minnesota lake; *Oestlund 10*, Minneapolis; *Sandberg 41*, Red Wing; *Herb. Moyer 23*, Montevideo.

XLIV. PAPAVERACEAE. Poppy Family.

Endlicher, *Gen. Pl.* 854 (1840); Benth, and Hook., *Gen. Pl.* I, 49 (1862); DC. *Syst.* II, 67 (1821)—*Fumariaceae;* Prantl and Kündig, *Engler and Prantl, Nat. Pflanz.* 3, II, 130 (1889).

Genera: 28; temperate and warmer regions; principally in N. temperate floral region; centers of distribution (1) Central and E. Asia; (2) Pacific North America; (3) Mediterranean region.

Species: 250±; 35 per cent. in genus *Neckeria.*

SANGUINARIA LINN. Gen. 425 (1737).

Belharnosia SARRAC. ex Adans. Fam. Pl. (1763).

Baillon, *Hist. Pl.* III, 141; Benth. and Hook., *Gen. Pl.* I, 53; Engler and Prantl, *Nat. Pflanz.* 3, II, 139 (Prantl and Kündig); Durand, *Ind. Gen. Phan.* 11; Gray, *Ill. Gen.* 115.

Living species: 1; woodlands of Atlantic North America.

Fossil species: (*Papaveraceae*) Schenck, *Palaeophyt.* 515, Lignitic in Saxony; doubtful.

Sanguinaria canadensis LINN. Spec. 505 (1753).

S. acaulis MOENCH, Meth. 227 (1794).

S. vernalis SALISB. Prodr. 377 (1796).

Wats. and Coult., Gray's Man. 6 ed. 58; Britt., Fl. N. J. 45; Chap., Fl. S. St. 22; Upham, Fl. Minn. 23; Mac., Fl. Can. I, 34; Engl. Prantl and Kündig, Nat. Pflanz. III, 2, 139; Cov., Fl. Ark. 164; Wats. Bibl. Ind. I, 43.

North America: N. S., N. Br., Q., Ont., to Man. and N. Dak., S. to N. Eng., N. J. and Fla.; W. to Minn. and Ark.

Minn. valley: Forest region and wooded banks to Montevideo and Glenwood; rare far W.; open woodland and shady banks.

HERB.: *Ballard 86*, Chaska; *Taylor 129*, Janesville; *Sheldon 26*, Elysian; *Herrick 24*, Minneapolis; *Arthur 157*, Vermilion Lake; *Kassube 22*, Minneapolis; *Herrick 25*, Minneapolis; *Sandberg 48*, Red Wing; *Hammond 7*, Lake City; *Herb. Wickersheim 11*, Mankato; *Herb. Sheld. 1806*, Minneapolis; *Herb. Moyer 25*, Montevideo.

CAPNORCHIS LUDW. Defin. Pl. 98 (1737).

Bikukulla ADANS. Fam. Pl. (1763).
Diclytra "BORKH." ex Bernh. and DC. Syst. (1818).
Dactylicapnos WALLICH, Teut. Fl. Nepal, 51 (1824).
Dicentra BERNH. Linn. VIII, 467 (1833).
Macrocapnos ROYLE, Lindl. Intro. ed. II, 439 (1835).
Eucapnos SIEB. and ZUCC. Abh. Ak. Mun. III, 721 (1842?).
Perizomanthus PURSH, Fl. Am. 462 (1814).

Baillon, *Hist. Pl.* III, 143; Benth. and Hook., *Gen. Pl.* I, 55; Engler and Prantl, *Nat. Pflanz.* 3, II, 143 (Prantl and Kündig); Durand, *Ind. Gen. Phan.* 12; O. Kuntze, *Rev. Gen. Pl.* I, 15; Gray, *Ill. Gen.* I, 119.

Living species: 15; 12 (B. and H.); Central, North and East Asia and North America; E. Sts. 3; S. Sts., 2; Canada, 3; Pac. coast, 4-5.

Capnorchis cucullaria (LINN.) O. KUNTZE, Rev. Pl. Gen. I, 15 (1891).

Fumaria cucullaria LINN. Spec. 699 (1753).
F. pallida SALISB. Prodr. 377 (1796).
Corydalis cucullaria PERS. Syn. II, 269 (1807).
Cucullaria bulbosa RAF. Med. Rep. V, 353 (1809).
Dicentra cucullaria DC. Syst. I, 108 (1818).
Diclytra cucullaria AUCT. VAR. After DC. Prodr.

Wats. and Coult., Gray's Man. 6 ed. 60; Upham, Fl. Minn. 23; Webb. Fl. Neb. 118; Chap., Fl. S. St. 23; Mac., Fl. Can. I, 35; Led., Fl. Ross. I, 97?; Wats., Bibl. Ind. I, 45; Engl. Prantl and Kündig, Nat. Pflanz. III, 2, 143; Cov., Fl. Ark. 164.

Kamtschatka?

North America: N. S., N. Br., Q., Ont. to Georgian Bay; S. to N. Eng., N. Y,, N. J., N. Car.; W. to Minn., Neb. and Ark.

Minn. valley: Throughout, especially at lower levels; shady banks and damp woodland openings.

HERB.: *Taylor 98*, Glenwood; *Herrick 26*, Minneapolis; *Kassube 23*, Minneapolis; *Holzinger 13*, Winona Co.; *Sandberg 49*, Red Wing; *Herb. Sheld 1866*, Ramsey Co.; *Herb. Wickérsheim 12*, Lake Benton; *Herb. Moyer 26*, Carlton Lake.

Capnorchis canadensis (GOLDIE) O. KUNTZE, Rev. Gen. Pl. I, 15 (1891).

Corydalis canadensis GOLDIE, Edin. Phil. Journ. VI, 330 (1822).
C. formosa PURSH, Fl. Am. 462 (1814) *in part.*
Diclytra canadensis DC. Prodr. I, 126 (1824).
D. eximia BECK, Bot. 23 (1833).

Wats. and Coult., Gray's Man. 6 ed. 60; Webb., Fl. Neb. 118; Britt., Fl. N. J. 46; Upham, Fl. Minn. 23; Mac., Fl. Can. I, 35; Engl. Prantl and Kündig, Nat. Pflanz. III, 2, 143; Wats., Bibl. Ind. I, 45.

North America: N. S., Q. and Ont. to Man.; S. to N.

J., Ohio and Neb. Range more northward than that of *C. cucullaria.*

Minn. valley: Reported from St. Paul and Blue Earth Co.; with *C. cucullaria* (Linn.) but much less abundant.

NECKERIA Scop. Introd. 1436 (1777).

Corydalis DC. Syst. II, 113 (1821).
Bulbocapnos Bernh. Linn. VIII, 469 (1833).
Phacocapnos Bernh. l. c. (1833).
Cryptoceras Schott, ex Walp. Ann. IV, 190 (1844–48).
Sophorocapnos Turcz. Bull. Mosq. I, 570 (1848).
Cysticapnos Boerh. ex DC. Syst. II, 112 (1821).
Ceratocapnos Dur. Parlat. Giorn. Bot. I, 336.
Capnodes Moehr. Hort. Priv. 22 (1736).
? **Pseudofumaria** Ludw. Defin. Pl. (1737) ex Kuntze.

Baillon, *Hist. Pl.* III, 144; Benth. and Hook. *Gen. Pl.* I, 55; Engler and Prantl, *Nat. Pflanz.* 3, II, 144 (Prantl and Kündig); Durand, *Ind. Gen. Phan.* 12; O. Kuntze, *Rev. Gen. Pl.* I, 13; Gray, *Ill. Gen.* 1, 123.

Living species: 90±; 70 (B. and H.); mostly in Mediterranean region and Central and N. E. Asia; a few in N. America, Cape of Good Hope region and Himalayas.; N. America, 9–10; Calif.-Oregon, 6; E. Sts., 5–6; Rocky mts., 4–5; S. Sts., 4; Canada, 5–6; Pl. Wheel., 1; Pl. King, 1; Russia, 35; Europe, 12; Russian Europe, 10; (Durand: 100 sp.).

Neckeria aurea (Michx.) Pfeiff. Bot. Zeit. XV, 649 (1857).

Fumaria aurea Michx. Fl. N. Am. (1803).
Corydalis aurea Willd. Enum. 740 (1809).
C. speciosa Maxim. Fl. Amur 39 (1859).

Wats. and Coult., Gray's Man. 6 ed. 61; Webb., Fl. Neb. 118 in var.; Coult., Fl. Colo. 14; Chap., Fl. S. St. 23; Upham, Fl. Minn. 23; Regel, Fl. O.-Sib. I, 149; Mac., Fl. Can. I, 36; Engl. Prantl and Kündig, Nat. Pflanz. III, 2, 144; Wats. King. Exp. 14; Cov., Fl. Ark. 165; Wats., Bibl. Ind. I, 44.

Amurland.

North America: Q., Ont., Man., N. W. T. to lat. 64°; S. to Vt. and Penn.; W. to Minn., Colo., Neb., Ark.; in mts. to Ft. Verde, Arizona.

Minn. valley: Throughout, particularly at higher levels and N. rather than S., although found on S. edge. Dry places.

Herb.: *Sheldon 1603,* Ft Snelling; *Taylor 897,* Glenwood; *Foote 1,* Worthington; *Roberts 11,* Duluth; *Bailey 508,* Agate Bay; *Kassube 24,* Ramsey Co.; *Sandberg 51,* Red Wing; *Sandberg 52,* Tower; *Sheldon, 1631,* Taylor's Falls; *Herb. Wickersheim 13,* Mankato; *Herb. Sheld. 1865,* Ft Snelling; *Herb. Moyer 27,* Carlton Lake.

Neckeria micrantha (ENGELM.).

Corydalis aurea var. *micrantha* ENGELM. in Gray, Man. 5. ed 62 (1867).

Corydalis micrantha (ENGELM.) WATS. and COULT. Gray's Man. 6 ed. 61 (1890).

Upham, Fl. Minn. 23; Webb., Fl. Neb. 118; Cov., Fl. Ark. 165; Wats., Bibl. Ind. I, 44; Wats., King. Exp. 14.

North America: N. Car., Neb., Mo. and Ark. to Iowa, Minn. and Uintah mts.

Minn. valley: S. edge, on higher levels; dry places and rocks.

HERB.: *Sheldon 794,* Cottonwood river, Sleepy Eye; *Foote 2,* Worthington.

Neckeria flavula (RAF.) PFEIFF. Bot. Zeit. XV. 649 (1857).

Fumaria flavula RAF. Desv. Journ. Bot. I, 224 (1808).

Corydalis flavula DC. Prodr. I, 129 (1824).

Wats. and Coult., Gray's Man. 6 ed. 60; Upham, Fl. Minn. 23; Britt., Fl. N. J. 46; Mac., Fl. Can. I, 37, 485; Cov., Fl. Ark. 165; Wats., Bibl. Ind. I, 44.

North America: Ont. to Penn., N. J., Minn. and Ark.; southward.

Minn. valley: Ft. Snelling to Blue Earth Co. and probably on higher levels along the N. side; dry banks.

HERB.: *Herrick 28,* Minneapolis.

Neckeria sempervirens (LINN.) SCOP. Intro. Hist. Nat. 313 (1777).

Fumaria sempervirens LINN. Spec. 700 (1753).

Capnodes glauca MOENCH, Meth. 52 (1794).

Corydalis sempervirens PERS. Syn. II, 269 (1807).

C. glauca PURSH, Fl. Am. 463 (1814).

Wats. and Coult., Gray's Man. 6 ed. 61; Upham, Fl. Minn. 23; Chap., Fl. S. St. 23; Mac., Fl. Can. I, 36; Engl. Prantl and Kündig, Nat. Pflanz. III, 2, 144; Regel., Fl. O.-Sib. I, 147; Wats., Bibl. Ind. I, 45; Rothr., Alask. 442.

Siberia and Kamtschatka.

North America: N. S., Q., Ont. to Brit Col., Rocky mts., Mackenzie river at lat. 64°; S. to N. Eng., N. J., N. Car.; W. to Minn. and Man.

Minn. valley: N. and N. W.; reported from Benton Co. and the Alexandria lake district. High bluffs and rocky places.

HERB.: *Roberts 8,* Put-in-bay; *Roberts 9,* Carlton's peak; *Herrick 27,* St. Louis river; *Roberts 10,* Duluth; *Bailey 114,* Vermilion lake; *Bailey 333,* St. Louis river; *Sandberg 50,* Tower.

XLV. CRUCIFERAE. Mustard Family.

Endlicher, *Gen. Pl.* 861 (1840); Benth. and Hook., *Gen. Pl.* I, 58 (1862); Prantl, *Engler and Prantl, Nat. Pflanz.* 3, II, 145 (1890); Baillon, *Hist. Pl.* III, 181 (1871).

Genera: 160—200; cosmopolitan; centers of distribution in boreal region and Mediterranean region. Fossil forms poorly understood; principally old world plants.

Species: 2000±; reduced to 1200 (B. and H.); most numerous in the Orient.

THELYPODIUM ENDL. Gen. 4915 (1836–40).

Pachypodium NUTT. Torr. and Gray, Fl. N. Am. I, 96 (1838).
Macropodium HOOK. Bot. Beech. 74 (1841).

Baillon, *Hist. Pl.* III, 243; Benth. and Hook., *Gen. Pl.* I, 81; Engler and Prantl, *Nat. Pflanz.* 3, II, 155 (Prantl); Durand, *Ind. Gen. Phan.* 13.

Living species: 15±; mostly Calif. and Rocky mts. North America, 15; Calif., 10; W. Tex., 5; Rocky mts., 7; Pl. King, 9; Pl. Wheel., 5; E. Sts., 1; Canada, 1; S. Sts., 1.

Thelypodium pinnatifidum (MICHX.) S. WATSON, King Exp. 25 (1871).

Hesperis (?) *pinnatifida* MICHX. Fl. N. Am. II, 31 (1803).
Cheiranthus hesperioides T. and G. Fl. N. Am. I, 72 (1838).
Iodanthus hesperioides T. and G. Gen. I, 134 (1849).

Wats. and Coult., Gray's Man. 6 ed. 72; Upham, Fl. Minn. 25; Chap., Fl. S. St. 25; Cov., Fl. Ark. 165; Wats., Bibl. Ind. I, 73.

North America: Penn. to Ohio and Minn.; S. to Tex.

Minn. valley: Only S. E. edge of valley and rare; stony places.

HERB.: *Sandberg 64,* Red Wing.

LEPIDIUM LINN. Gen. 527 (1737).

Physolepidium SCHRENK. Enum. 97 (1841–42).
Manoploga BUNGE, Pl. Preiss. I, 259 (1836).
Cardaria DESVX. Jour. Bot. III, 163 (1810).
Lepia DESVX. Jour. Bot. III, 166 (1810).
Cynocardamum WEBB, Phyt. Can. I, 96 (1836).

Baillon, *Hist. Pl.* III, 284; Benth. and Hook., *Gen. Pl.* I, 87; Engler and Prantl, *Nat. Pflanz.* 3, II, 160 (Prantl); Durand, *Ind. Gen. Phan.* 17; O. Kuntze, *Rev. Gen. Pl.* I, 34; Gray, *Ill. Gen.* 1, 167; Schenck, *Palaeophyt.* 514.

Living species: 100±; 60–80 (B. and H.); all regions except arctic and alpine. Russia, 20; Europe, 25; European Russia, 9; North America, 17; Pl. King, 9; Pl. Wheel., 5; W. Tex., 4; Canada, 3–7; S. Sts., 1; E. Sts., 2.

Fossil species: 1, Upper Miocene, Europe (*Heer*); doubtful.

Lepidium virginicum LINN. Spec. 645 (1753).

Clypeola caroliniana WALT. Fl. Car. 173 (1788).
Thlaspi virginianum POIR. Enc. Meth. VII, 544 (1806).
Dileptium diffusum and *praecox* RAF. Fl. Lud. 85 (1817).

Wats. and Coult., Gray's Man. 6 ed. 73; Chap., Fl. S. St. 30; Britt., Fl. N. J. 52; Webb., Fl. Neb. 118; Upham, Fl. Minn. 28; Mac., Fl. Can. I, 57; Gris., Fl. W. I.; Engl. Prantl, Nat. Pflanz. III, 2, 161; Cov. Fl. Ark. 166; Wats., Bibl. Ind. I, 65.

Introduced in Europe.

North America: United States throughout, except Pac. coast and N. W.; intro. in N. Eng. and Ontario.

Minn. valley: Throughout; along roadsides and railway embankments; abundant.

HERB.: *Sheldon 61*, Elysian; *Taylor 190*, Janesville; *Oestlund 14*, Hennepin Co.; *Herrick 43*, Minneapolis; *Holzinger 25*, Winona Co.; *Kassube 33*, Minneapolis; *Herb. Wickersheim 17*, Idlewild, Lincoln Co.

Lepidium intermedium GRAY, Pl. Wright, II, 15 (1852).

L. ruderale RICH. Frankl. Journ. 16 (1823) *not Linn.*

Wats. and Coult., Gray's Man. 6 ed. 73; Coult., Fl. Colo. 26; Brew. and Wats., Fl. Calif. I, 47; Webb., Fl. Neb. 118; Upham, Fl. Minn. 28; Mac., Fl. Can. I, 57, 491; Coult., Fl. Tex. 20; Wats., King. Exp. 29; Roth., Wheel. Exp. 66; Wats., Bibl. Ind. I, 64; Greene, Fl. Fran. 275.

North America: N. S., Ont., Man., B. C. to Hudson Bay and lat. 52°; S. to N. Y., Mich., Minn., Neb., Tex. and in mts. to N. Mexico; W. to S. California and N. along Pac. coast.

Minn. valley: N. and W. portions; probably throughout; with *L. virginicum* Linn., but less abundant.

HERB.: *Sandberg 71*, Cannon Falls; *Bailey 132*, Vermilion lake; *Bailey 524*, Agate Bay; *Moyer 245*, Montevideo, Chippewa Co.

SISYMBRIUM LINN. Gen. 547 (1737).

Velarum, Norta and **Arabidopsis** SCHUR. Enum. Transsylv. (1866).

Pachypodium and **Descurainia** WEBB. Phyt. Can. 75 (1836).

Chamaeplium and **Sisymbrella** (*part*) SPACH, Suit. Buff. VI, 433 (1839).

Hugueninia REICH. Ic. Fl. Germ. II, 80 (1837–38).
Tonguea ENDL. Gen. 4905 (1836–40).
Leptocarpaea DC. Syst. Veg. II, 201 (1821).
Stenophragma CLARK, ex Durand, *Ind. Gen.* (1888).
Drabopsis G. KOCH, Linn. XV, 253 (1840).
Maresia POMEL, ex Durand, l. c. (1888).
Alliaria ADANS. Fam. Pl. II, 418 (1763).

Baillon, *Hist. Pl.* III, 239; Benth. and Hook., *Gen. Pl.* I, 77; Engler and Prantl, *Nat. Pflanz.* 3, II, 169 (Prantl); Durand, *Ind. Gen. Phan.* 14;

O. Kuntze, *Rev. Gen. Pl.* I, 30; Gray, *Ill. Gen.* I, 151.

Living species: 60+; 80 (B. and H.): 90 (Durand); temperate regions of both hemispheres; tropical (mts.) Africa. Russia, 33; Europe, 31; European Russia, 21; N. America, 11–14; Canada, 9–10; Calif., 6; E. Sts., 2; Rocky mts., 5; S. Sts., 3; Pl. King, 3; Pl. Wheel., 3; W. Tex., 2.

Sisymbrium hartwegianum FOURN. Sisymb. 66 (1865).

S. canescens BENTH. Pl. Hartw. 9 (1836).
? *S. canescens* var. *brevipes* T. and G. Fl. I, 92 (1838).
S. sophia GRAY, Proc. Ac. Phil. 57 (1863) *in part.*
? *S. brachycarpum* HOOK. and ARN. Bot. Beech. 323 (1841).
S. incisum var. *hartwegianum* WATS. Bot. Calif. I, 41 (1873).
? *S. canescens* var. *brachycarpum* UPHAM, Fl. Minn. 26 (1883).
S. californicum WATS. King Exp. 23 (1870) *part.*

Coult., Fl. Colo. 23; Mac., Fl. Can. I, 47; Wats., Bibl. Ind. I, 69; Webb., Fl. Neb. 118 (*in part*); Greene, Fl. Fran. 271.

North America: N. W. T. and Brit. Colo. to Calif., Colo. and Tex.; E. to Minn. and Neb.

Minn. valley: N. W. and W. districts; dry banks and sandy shores of streams.

HERB.: *Sheldon 1406,* Lake Benton; *Taylor 1044,* Glenwood.

Sisymbrium multifidum (PURSH).

Erysimum pinnatum WALT. Fl. Car. 174 (1788).
Cardamine (?) *multifida* PURSH, Fl. Am. 440 (1814).
Sisymbrium canescens NUTT. Gen. II, 68 (1818).
Cardamine menziesii DC. Syst. II, 267 (1821).
Sisymbrium pinnatum GREENE, Bull. Calif. Acad. II (1887).

Wats. and Coult., Gray's Man. 6 ed. 72; Coult., Fl. Colo. 23; Brew. and Wats., Fl. Calif. I, 40; Upham, Fl. Minn. 26; Webb., Fl. Neb. 118; Britt., Fl. N. J. 51; Mac., Fl. Can. I, 46; Wats., King Exp. 23; Roth., Wheel. Exp. 64, 355; Cov., Fl. Ark. 166; Wats., Bibl. Ind. I, 68; Greene, Fl. Fran. 271.

North America: Arctic circle, throughout Canada; S. in mts. to Mexico; W. to Calif.; E. to Penn., N. Y. and N. J.

Minn. valley: Throughout, in waste places and along roadsides or on sandy banks.

HERB.: *Ballard 136,* Chaska; *Sheldon 1406,* Lake Benton; *Sheldon 307,* Madison Lake; *Taylor 1044,* Glenwood; *Holzinger 24,* Winona Co.; *Herrick 41,* Minneapolis; *Kassube 31,* Minneapolis; *Sandberg 67,* Red Wing; *Huntington 2,* Rock Co.; *Herb. Sheld. 1843,* Ft. Snelling; *Herb. Moyer 31,* Montevideo.

BARBAREA R. BR. Hort. Kew. IV, 109 (1812).

Baillon, *Hist. Pl.* III, 232; Benth. and Hook., *Gen. Pl.* I, 68; Engler and Prantl, *Nat. Pflanz.* 3, II, 183 (Prantl); Durand, *Ind. Gen. Phan.* 12; Gray, *Ill. Gen.* I, 147.

Living species: 14; 25 enum. 6 reduc. (B. and H.); temperate and boreal region of N. hemisphere; also Australia. Europe, 9–10; Russia, 6; North America, 1–2.

Barbarea barbarea (LINN.) var. **stricta** (Andrz.).

Barbarea stricta ANDRZ. Bess. Pl. Volhyn. 72 (1822).
Barbarea vulgaris R. BR. var. *stricta* REGEL, Fl. O.-Sib. I, 155 (1862).
B. praecox RICH. Frankl. Journ. 15 (1823).

Wats. and Coult., Gray's Man. 6 ed. 70; Coult., Fl. Colo. 23 *in part;* Upham, Fl. Minn. 25; Wats., King Exp. 50; Brew. and Wats., Fl. Calif. I, 40 *in part;* Regel, Fl. O.-Sib. I, 155; Mac., Fl Can. I, 44; Forbes and Hemsl., Fl. Sin. I, 41 *spec.;* Led., Fl. Ross. I, 115; Nym., Fl. Eur.; Miyabe, Fl. Kur. 217; Herd., Fl. Eur. Russ. 14; Hook., Fl. Gt. Brit. 26; Wats., Bibl. Ind. I, 50; Hart., Fl. Scand. I, 192; Rothr., Alask. 442.

Europe: Scandinavia to Italy and mid. Russ.; Siberia; Kamtschatka; China? The species is nearly cosmopolitan, being found in N. hemisphere throughout and in Africa and Australia. It is by no means certain that *B. stricta* Andrz. is not a good species.

North America: L. Superior to Oregon and Brit. Col.; S. in mts. to Colo. and N. in Man. Eastern forms are probably introduced and adventive from Europe.

Minn. valley: Only in N. E. corner and rare; wet grounds and roadsides.

HERB.: *Roberts 13,* Two Harbors; *Holzinger 20,* Winona Co.; *Lackor 1,* Hennepin Co.

NASTURTIUM R. BR. Hort. Kew. IV, 109 (1812).

Leiolobium REICH. Consp. 184 (1828).
Roripa BESS. (part) ex Gren. and Godr. Fl. Fr. I, 125 (1848).
Nasturtiopsis BOISS. Fl. Or. I, 237 (1842).
Brachylobus SCHUR. Enum. Transsylv. 39 (1866).
Clandestinaria SPACH, Suit. Buff. VI, 478 (1839).

Baillon, *Hist. Pl.* III, 232; Benth. and Hook., *Gen. Pl.* I, 68; Engler and Prantl, *Nat. Pflanz.* 3, II, 184 (Prantl); Durand, *Ind. Gen. Phan.* 12; O. Kuntze, *Rev. Gen. Pl.* I, 21; Gray, *Ill. Gen.* I, 131.

Living species: 50+; 20 (B. and H,); 25 (Durand); cosmopolitan. Russia, 18; Russian Europe, 11; Europe, 17; North America, 13; W. Tex., 5; Canada, 8–9; E. Sts., 5; Rocky mts., 5; S. Sts., 8; Calif., 5; Pl. King., 5; Pl. Wheel., 5–6.

Nasturtium hispidum (DESV.) DC. Syst. II, 201 (1821).

Brachylobus hispidus DESV. Journ. Bot. II, 183 (1809).
Sisymbrium hispidum POIR. Suppl. XIII, 161 (1817).
Nasturtium palustre var. *hispidum* F. and M. Ind. Sem. Petr. III, 41 (1838).

Wats. and Coult., Gray's Man. 6 ed. 70; Coult., Fl. Colo. 24; Brew. and Wats., Fl. Calif., I, 42; Webb., Fl. Neb. 119; Upham, Fl. Minn. 24; Regel, Fl. O.-Sib. I, 151 *in part?;* Mac., Fl. Can. I, 38, 485; Led., Fl. Ross. I, 113 *in part?;* Wats., King Exp. 16; Roth., Wheel. Exp. 61; Wats., Bibl. Ind. I, 66.

Transbaikal Siberia?

North America: N. W. T. and Sierras to the Atl. and Gulf of Mexico.

Minn. valley: Principally S. W. and W.; with *N. palustre* (Leys.).

HERB.: *Sheldon 1512,* Lake Benton; *Taylor 652,* Minnesota lake.

Nasturtium palustre (LEYS.) DC. Syst. II, 191 (1821).

Sisymbrium palustre LEYS. Fl. Hal. (1761).
Radicula palustris MOENCH, Meth. 263 (1794).
Camelina barbareaefolia DC. Syst. II, 517 (1821).
Roripa nasturtioides SPACH, Phan. VI, 506 (1838).

Wats. and Coult., Gray's Man. 6 ed. 70; Coult., Fl. Colo. 24; Webb., Fl. Neb. 119; Wats., King Exp. 15, 16; Upham, Fl. Minn. 24; Brew. and Wats., Fl. Calif. I, 42; Chap., Fl. S. St. 25; Mac., Fl. Can. I, 37, 485; II, 300; Forbes and Hems., Fl. Sin. I, 41; Led., Fl. Ross. I, 112; Wats., Bibl. Ind. I, 66; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 14; Engl. Prantl, Nat. Pflanz. III, 2, 184; Coult., Fl. Tex. 17; Roth., Wheel. Exp. 61; Hart., Fl. Scand. I, 193; Rothr., Alask. 442; Greene, Fl. Fran. 268.

Europe; N. Africa; N. and temp. Asia.

North America: Greenland and N. S. to Alaska, N. W. T. and B. C.; S. to gulf and in Mexico; E. to N. Eng., N. J. and N. Car.

Minn. valley: Throughout; wet places and marshy meadows.

HERB.: *Sheldon 1398,* Lake Benton; *Ballard 326,* Belle Plaine; *Ballard 266,* Jordan, Scott Co.; *Ballard 671,* Waconia; *Taylor 862,* Glenwood; *Sheldon 1093,* Springfield; *Sheldon 760,* Sleepy Eye; *Taylor 230,* Janesville; *Taylor 341,* Janesville; *Taylor 164a,* Janesville; *Oestlund 12,* Minneapolis; *Herrick 29,* Minneapolis; *Kassube 25,* Minneapolis; *Herrick 30,* St. Louis river; *Holzinger 14,* Winona Co.; *Sandberg 53,* Cannon Falls; *Herb. Moyer 246,* Montevideo.

Nasturtium sinuatum NUTT. T. and G. Fl. I, 73, 666 (1838).

Wats. and Coult., Gray's Man. 6 ed. 70; Coult., Fl. Colo. 24: Wats., Bibl. Ind. I, 67; Roth., Wheel. Exp. 61; Brew. and Wats., Fl. Calif. I, 43; Cov., Fl. Ark. 165; Wats., King Exp. 15; Webb., Appx. Neb. 31; Greene, Fl. Fran. 267.

North America: Sierra Nevada mts. to Mexico; E. to Mississippi valley; N. to Minn, and Dak.

Minn. valley: Lower levels, especially E. and N. E.; Ft. Snelling to New Ulm.

HERB: *Ballard 37,* Chaska; *Ballard 653,* Chaska.

CARDAMINE LINN. Gen. 541 (1737).

Dentaria LINN. Gen. 540 (1737),
Pteroneuron DC. Prodr. I, 154 (1824).
Kardanoglyphos SCHLECHT. Linn. XXVIII, 472 (1853).

Baillon, *Hist. Pl.* III, 234; Benth. and Hook., *Gen. Pl.* I, 70; Engler and Prantl, *Nat. Pflanz.* 3, II. 184 (Prantl); Durand, *Ind. Gen. Phan.* 13; O. Kuntze, *Rev. Gen. Pl.* I, 21; Gray, *Ill. Gen.* I, 135, 137.

Living species: 65; boreal regions and to tropics in N. hemisphere; also Peru, Argentine, Brazil (a few species). N. America, 20; E. Sts., 8; Canada, 12–13; S. Sts., 10; Pac. coast, 10–12.

Cardamine parviflora LINN. Spec. ed. 2, 914 (1762).

C. sylvatica LINK. DC. Syst. II, 260 (1821).
C. hirsuta var. *sylvatica* GRAY, Man. 5 ed. 67 (1868).
C. flexuosa BRITT. Trans. N. Y. Acad. IX, 8 (1889) *not With.*

Wats. and Coult., Gray's Man. 6 ed. 65; Upham, Fl. Minn. 24; Britt., Fl. N. J. 49; Mac., Fl. Can. I, 41, 486; II, 302; Nym., Fl. Eur.; Led., Fl. Ross. I, 127; Regel, Fl. O.-Sib. I, 171; Herd., Fl. Eur. Russ. 14; Hook., Fl. Gt. Brit. 29; Wats., Bibl. Ind. I, 53.

Northern England to Shetland; N. Asia; Eur. exc. far N. E. and Greece, Turkey and Italy.

North America: Range as that of *C. hirsuta* Linn.

Minn. valley: N. E. in valley and extending probably to Blue Earth Co.; drier places and banks of streams; rare.

HERB.: *Herrick 35*, L. Minnetonka, S. shore.

Cardamine hirsuta LINN. Spec. 655 (1753).

Cardamine pennsylvanica MUHL. Willd. Spec. III, 486 (1800).
? *Sisymbrium nasturtium* WALT. Fl. Car. 174 (1788).

Wats. and Coult., Gray's Man. 6 ed. 65; Coult., Fl. Colo. 19; Chap., Fl. S. St. 26; Britt., Fl. N. J. 49; Upham, Fl. Minn. 24; Mac., Fl. Can. I, 41; Forbes and Hems., Fl. Sin. 43; Led., Fl. Ross. I, 127; Nym., Fl. Eur.; Gris., Fl. W. I.; Herd., Fl. Russ. Eur. 10; Engl. Prantl, Nat. Pflanz. III, 2, 185; Cov., Fl. Ark. 166; Hook., Fl. Gt. Brit. 28; Wats., Bibl. Ind. I, 53; Hart., Fl. Scand. I, 189; Rothr., Alask. 443.

Shetland; Scotland; England; N. Russ. to Caucasus; N. Asia and China.

North America: N. S. to Arctic ocean and Pac. and Alaska; S. to N. Eng., N. J. and Fla. to Dak., Colo. and Mont.; Jamaica.

Minn. valley: Forest region from Ft. Snelling to Blue Earth Co.; E. and N.; marshy meadows; not common.

HERB.: *Sheldon 1476*, Pipestone; *Taylor 1000a*, Janesville; *Sheldon 812*, Sigel township, Brown Co.; *Taylor 279*, Janesville; *Sheldon 294*, Madison Lake; *Ballard 113*, Carver, *Roberts 12*, Agate bay; *Herrick 33*, Minneapolis; *Herrick 34*, St Louis river; *Holzinger 16*, Winona Co.; *Kassube 27*, Mendota·

Bailey 405, Burntside lake; *Holzinger 17*, Winona Co.; *Sandberg 57*, Red Wing; *Leiberg 8*, Blue Earth Co.; *Herb. Moyer 247*, Montevideo.

These plants are under the *C. pennsylvanica* of Muhl., which differs somewhat from European *C. hirsuta* Linn.

Cardamine bulbosa (SCHREB.) B.S.P. Cat. Pl. N. Y. (1888).

Arabis bulbosa SCHREB. Icon. (1766).
A. rhomboidea PERS. Syn. II, 204 (1807).
Thlaspi tuberosum NUTT. Gen. II, 65 (1818).
Cardamine rhomboidea DC. Syst. II, 246 (1821).

Wats. and Coult., Gray's Man. 6 ed. 65; Britt., Fl. N. J. 49; Chap., Fl. S. St. 25; Mac., Fl. Can. I, 40; Upham, Fl. Minn. 24; Cov., Fl. Ark. 165; Wats., Bibl. Ind. I, 54.

North America: N. S., Ont., N. Eng. to Fla.; W. to Minn. and Dak.

Minn. valley: Throughout, but more abundant in forest region; springs; near streams and in marshy meadows.

HERB.: *Menzel 2*, Pipestone; *Ballard 29*, Chaska; *Kassube 26*, Minneapolis; *Herrick 31*, Minneapolis; *Herrick 32*, Minneapolis; *Sandberg 56*, Cannon Falls; *Herb. Sheld. 1845*, Minneapolis; *1725*, Ramsey Co.; *Herb. Moyer 28*, Montevideo.

Cardamine laciniata (MUHL.) WOOD, Bot. and Fl. 38 (1861).

Dentaria laciniata MUHL. Willd. Spec. III, 479 (1800).
D. concatenata MICHX. Fl. N. Am. II, 30 (1803).

Wats. and Coult., Gray's Man. 6 ed. 64; Chap., Fl. S. St. 26; Upham, Fl. Minn. 24; Britt., Fl. N. J. 49; Mac., Fl. Can. I, 39; Cov., Fl. Ark. 166; Wats., Bibl. Ind. I, 56; Webb., Appx. Neb. 31.

North America: Q., Ont., N. Eng., N. J. to Fla.; W. to Minn., Dak., Neb., Kan. and Ark.

Minn. valley: Eastern half; Ft. Snelling to Blue Earth Co.; especially forest region; banks of lakes and streams.

HERB.: *Sheldon 138*, Madison Lake; *Sheldon 173*, Eagle Lake, Blue Earth Co.; *Powell 1*, St. Paul; *Leiberg 7*, Blue Earth Co.; *Holzinger 15*, Winona Co.; *Sandberg 54*, Red Wing; *Sandberg 55*, Minneapolis; *Herb. Wickersheim 14*, Mankato.

Cardamine diphylla (MICHX.) WOOD, Bot. and Fl. 37 (1861).

Dentaria diphylla MICHX. Fl. N. Am. II, 30 (1803).

Wats. and Coult., Gray's Man. 6 ed. 64; Britt., Fl. N. J. 49; Chap., Fl. S. St. 26; Upham, Fl. Minn. 24; Mac., Fl. Can. I, 39; Wats., Bibl. Ind. I, 56.

North America: N. S., N. Br., Q., Ont. to L. Superior region; S. to Maine, N. J., Kentucky and Minn.

Minn. valley: Ft. Snelling to Blue Earth Co.; rich woodland and banks of streams; rare or local.

LESQUERELLA S. WATS. Proc. Am. Acad. XV, 249 (1888).

Physaria NUTT. T. and G. Fl. I, 101 (1838) *not Pers.*
Coulterina O. KUNTZE, Rev. Gen. II Nachtr., 931 (1891).
Vesicaria AUCT. AM.

Baillon, *Hist. Pl.* III, 273; Benth. and Hook., *Gen. Pl.* I, 73; Engler and Prantl, *Nat. Pflanz.* 3, II, 187; Durand, *Ind. Gen. Phan.* 13.

Living species: 33; Mexico; W. N. America to Greenland and Brazil; especially developed in plateaus of the S. W. W. Tex., 12; E. Sts., 3; Canada, 5; S. Sts. 1.

Lesquerella argentea (PURSH).

Myagrum argenteum PURSH, Fl. Am. 434 (1814).
Vesicaria globosa DESVX. Journ. Bot. III, 181 (1814).
Alyssum ludovicianum NUTT. Gen. II, 63 (1818).
Vesicaria ludoviciana DC. Syst. II, 297 (1821).
Physaria argentea MACM. MSS. (1890).
Lesquerella ludoviciana S. WATS. Gray's Man. 6 ed. 69 (1890).

Coult., Fl. Colo. 25; Webb., Fl. Neb. 119; Upham, Fl. Minn. 27; Mac., Fl. Can. I, 54, 490; II, 305; Wats., Bibl. Ind. I, 75.

North America: Minn., Neb., Colo., Wyoming; S. to Arizona?; N. to N. W. T.

Minn. valley: S. W. and N. W. portions; rocky banks and high bluffs; rare.

HERB.: *Sandberg 70*, Red Wing.

DRABA LINN. Gen. 535 (1737).

Erophila DC. Syst. II, 356 (1821).
Petrocallis R. BR. Hort. Kew. IV, 93 (1812).
Dollineria SAUT. Flora, 353 (1852).
Holargidium TURCZ. Led., Fl. Ross. I, 156 (1842).
Coleonema MAXIM. ex Durand (1888).
Heterodraba GREENE, ex Prantl (1890).

Baillon, *Hist. Pl.* III, 271; Benth. and Hook., *Gen. Pl.* I, 74; Engler and Prantl, *Nat. Pflanz.* 3, II, 190 (Prantl); Durand, *Ind. Gen. Phan.* 14; Gray, *Ill. Gen.* I, 159.

Living species: 150+; 70-80 (B. and H.); mountain districts in almost all regions; arctic, antarctic and sub arctic regions; principally in Northern hemisphere. Russia, 47; Russian Europe, 19; Europe, 35; North America, 24; Canada, 18; Rocky mts , 12; Calif., 9; E. Sts., 6; S. Sts., 5; Pl. King, 7–8; Pl. Wheel., 7; W. Tex., 2.

Draba nemorosa LINN. Spec. 643 (1753).

D. nemoralis EHRH. Beitr. VII, 154 (1792).
D. nemorosa vars. *lejocarpa* and *hebecarpa* LED. Fl. Ross. I, 154 (1842).

Wats. and Coult., Gray's Man., 6 ed. 68; Coult., Fl. Colo. 17; Brew. and Wats., Fl. Calif. I, 28?; Upham, Fl. Minn. 27; Trautv., Fl. Sib. 23; Regel, Fl. O.-Sib. I, 198; Mac., Fl. Can. I, 52; Forbes and Hems., Fl. Sin. I, 41;

Led., Fl. Ross., l. c.; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 18; Engl. Prantl, Nat. Pflanz. III, 2, 190; Wats., King Exp. 22; Wats., Bibl. Ind. I, 60; Hart., Fl. Scand. I, 205; Rothr., Alask. 443.

Europe: Sweden to Pyrenees, Hungary, Mid. Russ. and Caucasus; Siberia, Amurland, China, Baikal mts. and Kamtschatka.

North America: All western Can. to lat. 66° N.; E. to L. Superior and Montreal; S. through Yellowstone river region to Colo.; E. to Minn. and Mich.

Minn. valley: The plants of this region do not seem to be different from the typical *D. nemorosa* Linn. N. edge of valley especially in Leaf Hill district; dry hillsides.

HERB.: *Gedge 2*, Glyndon; *Herb. Moyer 248*, Montevideo.

Draba caroliniana WALT. Fl. Car. 174 (1788).

? *Arabis reptans* LAM. Enc. Meth. I, 222 (1783).
Draba hispidula MICHX. Fl. N. Am. II, 28 (1803).
D. umbellata MUHL. Cat. 62 (1813).
Arabis rotundifolia RAF. Am. Mo. Mag. II, 23 (1830).

Wats. and Coult., Gray's Man. 6 ed. 68; Webb., Fl. Neb. 119; Britt., Fl. N. J. 50; Chap., Fl. S. St. 29; Upham, Fl. Minn. 27; Mac., Fl. Can. I, 52; Wats., King Exp. 23; Cov., Fl. Ark. 166; Wats., Bibl. Ind. I, 59.

North America: E. Mass. and N. J. to Ga.; W. to Minn. and Neb.; S. Ontario.

Minn. valley: Throughout except far N. W.; at higher levels; sandy and dry hillsides or banks.

HERB.: *Kassube 32*, Minneapolis: *Herrick 42*, Minneapolis; *Sandberg 68*, Red Wing; *Simmons 1*, Minneapolis; *Sandberg 69*, Cannon Falls; *Herb. Moyer 32*, Montevideo.

Draba micrantha NUTT. T. and G. Fl. I, 109 (1838).

D. caroliniana var. *micrantha* GRAY, Man. 5 ed. 72 (1867).

Wats. and Coult., Gray's Man. 6 ed. 68; Webb., Fl. Neb. 119; Upham, Fl. Minn. 27; Coult., Fl. Tex. 18; Cov., Fl. Ark. 166; Wats., Bibl. Ind. I, 59.

North America: Minn., Ill., Iowa, Neb., Kan., Mo., Ark., Tex.

Minn. valley: S. edge and infrequent; dry hillsides.

Draba verna LINN. Spec. 642 (1753).

D. verna var. *americana* PERS. Syn. II, 190 (1807).
Erophila americana and *vulgaris* DC. Syst. II, 356 (1821).
Erophila vulgaris var. *americana* DARL. Fl. Cestr. 378 (1837).

Wats. and Coult., Gray's Man. 6 ed. 68; Upham, Fl. Minn. 27; Mac., Fl. Can. I, 53; Led., Fl. Ross. I, 155; Herd., Fl. Russ. Eur. 10; Engl. Nat. Pflanz. III, 2, 190; Wats., Bibl. Ind. 62; Chap., Fl. S. St. 29; Hart., Fl. Scand. I, 205.

Europe: Mediterranean region and Russia.

North America: Q., Ont., N. Eng. and Atl. coast to Fla.; W. to Minn. and Mo. The absence of this species N. W. in Brit. Amer. is perhaps evidence that it is introduced and not endemic. It is included here owing to a doubt whether this argument is conclusive.

Minn. valley: Ft. Snelling; roadsides and waste places; only N. E.

ARABIS LINN. Gen. 544 (1737).

Turritis LINN. Gen. 819 (1737).

Stevenia AD. and FISCH. Led. Fl. Ross. I, 123 (1840).

Arabidium SPACH, Suit. Buff. VI, 436 (1839).

Baillon, *Hist. Pl.* III, 233; Benth. and Hook., *Gen. Pl.* I, 69; Engler and Prantl, *Nat. Pflanz.* 3, II, 192 (Prantl); Durand, *Ind. Gen. Phan.* 13; Gray, *Ill. Gen.* 141, 143; O. Kuntze, *Rev. Gen. Pl.* I, 27.

Living species: 145 described; 105± distinct; 65 (B. and H.); 79 (Durand); principally in Europe and Asia; boreal to Mediterranean provinces; also North America and a few in South America, the Orient and Australia. Russia, 30; Europe, 35; Russian Europe, 13; North America, 21; Canada, 19–20; Calif., 10; E. Sts., 9; Rocky mts., 8; S. Sts., 6; W. Tex., 2; Pl. King, 9; Pl. Wheel., 3.

Arabis dentata TORR. T. and G., Fl. I, 80 (1838).

Sisymbrium dentatum TORR. Short and Peter Pl. Kent. 3d Suppl. 338 (1834).

Shortia dentata RAF. Autik. Bot. 17 (1836).

Wats. and Coult., Gray's Man. 6 ed. 67; Upham, Fl. Minn. 24; Chap., Fl. S. St. 27; Wats., Bibl. Ind. I, 47: Webb., Appx. Neb. 31.

North America: N. Y. to Tenn.; W. to Mich., Minn. and Neb.

Minn. valley: Ft. Snelling to Blue Earth Co.; woods and shaded banks; rare.

HERB.: *Sandberg 59*, Red Wing; *Mayland 1*, Minneapolis.

Arabis lyrata LINN. Spec. 665 (1753).

Sisymbrium arabidoides HOOK. Fl. Bor.-Am. I, 63 (1833).

S. humifusum J. VAHL, Fl. Dan. XIII, 2297 (1840).

Wats. and Coult., Gray's Man. 6 ed. 67; Britt., Fl. N. J. 48; Chap., Fl. S. St. 27; Upham, Fl. Minn. 24; Coult., Fl. Colo. 20; Mac., Fl. Can. I, 41; Miyabe, Fl. Kur. 217; Wats., Bibl. Ind. I, 49.

Middle and N. Japan to Kurile Islands.

North America: E. Can. to B. C. and lat. 68° N.; S. to N. Eng., N. J. and N. Car.; W. to Mont., Colo., Minn. and Neb.

Minn. valley: Only in region of Ft. Snelling and N E. edge; rocky banks and dry places.

HERB.: *Sandberg 58*, Red Wing; *Holzinger 18*, Winona Co.; *Holzinger 19*, Winona Co.

Arabis confinis S. WATSON, Proc. Am. Acad. XXII, 466 (1887).

A. drummondii GRAY, Proc. Am. Acad. VI, 187 (1863).

Wats. and Coult., Gray's Man. 6 ed. 67; Upham, Fl. Minn. 25; Webb., Fl. Neb. 119; Coult., Fl. Colo. 20; Mac., Fl. Can. I, 43; II, 303; Roth., Wheel. Exp. 62; Wats., King Exp. 17, 18; Cov., Fl. Ark. 165; Wats., Bibl. Ind. I, 47.

North America: N. Br., Q., Ont. to Pac., lat. 52°; S. in Rockies to S. Colo.; E. to St. Lawrence river, Conn., Ill. and N. Y.

Minn. valley: N. and E. portions; forest district; dry and stony banks and fields.

HERB.: *Herrick 38*, Minneapolis; *Sandberg 63*, Cannon Falls; *Kassube 29*, Minneapolis; *Herb. Sheld. 1846*, Minneapolis; *Herb. Wickersheim 15*, Mankato.

Arabis glabra (LINN.) WEINM. Cat. Dorp. 18 (1810).

Turritis glabra LINN. Spec. 666 (1753).

Arabis perfoliata LAM. Enc. Meth. I, 219 (1783).

Turritis macrocarpa NUTT. T. and G. Fl. I, 78 (1838).

Wats. and Coult., Gray's Man. 6 ed. 66; Britt., Fl. N. J. 49; Upham, Fl. Minn. 25; Coult., Fl. Colo. 19; Hook., Fl. Gt. Brit. 27; Mac., Fl. Can. I, 43; Led., Fl. Ross. I. 116; Regel, Fl. O.-Sib. I, 160; Wats., King Exp. 17; Roth., Wheel. Exp. 61; Cov., Fl. Ark. 165; Wats., Bibl. Ind. I, 49; Webb., Appx. Neb. 31; Greene, Fl. Fran. 253.

Arctic Europe; temp. Asia to Himalayas.

North America: Ont., Hudson Bay to Slave lake, Rockies lat. 64° N. and Brit. Col.; S. in West to San Diego, Cal.; E. to N. Eng. and N. J.

Minn. valley: Forest district to Blue Earth Co.; rare or infrequent; N. and N. E.; rocky and dry places.

HERB.: *Juni 1*, Poplar river.

Arabis canadensis LINN. Spec. 655 (1753).

Arabis falcata MICHX. Fl. N. Am. I. 31 (1803).

A. mollis RAF. Am. Mo. Mag. (1810?).

Turritis lyrata RAF. Am. Mo. Mag. (1810?).

Arabis lyraefolia DC. Syst. II, 244 (1821).

Wats. and Coult., Gray's Man. 6 ed. 66; Britt., Fl. N. J. 48; Webb., Fl. Neb. 119; Chap., Fl. S. St. 28; Upham, Fl. Minn. 25; Mac., Fl. Can. I, 44; Cov., Fl. Ark. 165; Wats., Bibl. Ind. I, 47.

North America: Ont., N. Y. and N. Eng.; S. to N. J., Va. and Tenn.; W. to Neb., Minn., Dak., Mo. and Ark.

Minn. valley: Throughout at lower levels and perhaps far westward; wooded valleys and edges of thickets.

HERB.: *Sheldon 937*, Redwood Falls; *Ballard 196*, Jordan, Scott Co.; *Sheldon 611*, Wilton, Waseca Co.; *Sandberg 62*, Cannon Falls; *Oestlund 13*, Hennepin Co.

Arabis laevigata (MUHL.) POIR. Suppl. I, 411 (1810).

Turritis laevigata MUHL. Willd. Spec. III, 543 (1802).
? *Arabis pendula* NUTT. Gen. II, 70 (1818).
A. heterophylla NUTT. T. and G. Fl. I, 81 (1838).

Wats. and Coult., Gray's Man. 6 ed. 66; Chap., Fl. S. St. 28: Britt., Fl. N. J. 48; Upham, Fl. Minn. 25; Mac., Fl. Can. I, 44; Cov., Fl. Ark. 165; Wats, Bibl. Ind. I, 49.

North America: Q., Ont., N. Eng., N. J. to Minn.; S. to Tenn. and N. Car.

Minn. valley: E. and N. region; forest district; local or infrequent.

HERB.: *Taylor 141*, Janesville; *Sheldon 56½*, Elysian; *Sandberg 61*, Taylor's Falls.

Arabis hirsuta (LINN.) SCOP. Fl. Carn. ed. II, 835 (1772).

Turritis hirsuta LINN. Spec. (1753).
Turritis hirsuta MUHL. Cat. 61 (1813).
T. ovata PURSH. Fl. Am. 21, 38 (1814).
T. oblongata RAF. Am. Mo. Mag. II, 44 (1810).

Wats. and Coult., Gray's Man. 6 ed. 66; Britt., Fl. N. J. 48; Webb.. Fl. Neb. 119; Chap., Fl. S. St. 27; Upham, Fl. Minn. 24; Hook., Fl. Gt. Brit. 27; Trautv., Fl. Sib. 16; Brew. and Wats., Fl. Calif. I, 32; Regel, Fl. O.-Sib. I, 160; Mac., Fl. Can. I, 42; Forbes and Hems., Fl. Sin. I, 42; Led., Fl. Ross. I, 118; Herd., Fl. Russ. Eur. 14; Engl. Prantl, Nat. Pflanz. III, 2, 193; Wats., King Exp. 16 in part; Roth., Wheel. Exp. 62?; Cov., Fl. Ark. 165; Wats., Bibl. Ind. I, 48; Hart., Fl. Scand. I, 190; Rothr., Alask. 442.

Europe: Scandinavia to Italy, Servia and Mid. Russ.; N. Asia to Caucasus, Baikal mts. and Kamtschatka.

North America: N. Br. to Brit. Col., Pac. and Alaska; S. to N. Eng., N. J. and Tenn.; W. to Neb., Minn., Colo. and Ark.; Black Hills.

Minn. valley: Throughout; dry banks and rocky places; frequent.

HERB.: *Sheldon 799*, Sleepy Eye; *Taylor 42*, Elysian; *Sheldon 9*, Waterville; *Ballard 378*, Jordan, Scott Co.; *Taylor 647*, Minnesota lake; *Kassube 28*, Minneapolis; *Herrick 36*, Minneapolis; *Sandberg 60*, Cannon Falls; *Herrick 37*, Minneapolis; *Leiberg 9*, Blue Earth Co.; *Herb. Sheldon 1911*, Minneapolis; *Herb. Moyer 29*, Montevideo.

Arabis patens SULLIV. Am. Journ. Sci. I, 42, 49 (1842).

Wats. and Coult., Gray's Man. 6 ed. 66; Upham, Suppl. Fl. Minn. 46; Chap., Fl. S. St. 27; Wats., Bibl. Ind. I, 49.

Penn. to Ohio and Tenn.; local in Minn.

Minn. valley: Nicollet Co. Glen five miles above Mankato. Reported as local.

ERYSIMUM LINN. Gen. 545 (1737).

Braya S. and H. DC. Syst. II, 210 (1821).
Platypetalum R. BR. Appx. Parr. Voy. 266 (1823).
Strophades BOISS. Ann. Sci. Nat. Ser. 2. XVII, 73 (1842).

Baillon, *Hist. Pl.* III, 240; Benth. and Hook., *Gen. Pl.* I, 79; Engler and Prantl, *Nat. Pflanz.* 3, II, 193 (Prantl); Durand, *Ind. Phan. Gen.* 15; Gray, *Ill. Gen.* I, 149; O. Kuntze, *Rev. Gen.* I, 27.

Living species: 125 described; 80 clearly defined; Southern Europe, Mediterranean region and the Orient; also Central Asia and North America; Himalayas and Mexico; Russia, 30; Europe, 30; Russian Europe, 19; North America, 4–5; E. Sts., 3; Calif. 1; Rocky mts., 4; W. Tex., 1; S. Sts., 1; Canada, 3; Pl. King, 2; Pl. Wheel., 5.

Erysimum inconspicuum (S. WATS.).

Erysimum parviflorum NUTT. T. and G. Fl. I, 95 (1838), *not Pers.*
E. lanceolatum HOOK. Fl. Bor.-Am. I, 64 (1833) *not R. Br.*
E. asperum var. *inconspicuum* S. WATSON, King. Exp. 24 (1871).

Wats. and Coult., Gray's Man. 6 ed. 71; Coult., Fl. Colo. 22; Brew. and Wats. Fl. Calif. I, 39; Upham, Fl. Minn. 25; Mac., Fl. Can. I, 45, 487; Wats., Bibl. Ind. I. 63.

North America: Saskatchewan to Brit. Col. and N. W. T.; Alaska 62° 45′ N.; E. to Man. and Minn.; S. to Kan.

Minn. valley: Sparingly, throughout; along railway tracks and sandy banks.

HERB.: *Sheldon 361*, Madison Lake; *Upham 1*, Minneapolis; *Holzinger 23*, Winona; *Sandberg 66*, Red Wing.

Erysimum asperum (NUTT.) DC. Syst. II, 505 (1821).

Cheiranthus asper NUTT. Gen. II, 69 (1818).
Erysimum lanceolatum PURSH, Fl. Am 436 (1814) *not R. Br.*
? *E grandiflorum* NUTT. ex Greene, Fl. Fran. 269 (1891).

Wats. and Coult., Gray's Man. ed. 6, 71; Coult., Fl. Colo. 22; Brew. and Wats., Fl. Calif. 39; Webb., Fl. Neb. 118 in var.; Upham, Fl. Minn. 25; Mac., Fl. Can. I, 45; Coult., Fl. Tex. 16; Wats., King Exp. 24; Roth., Wheel. Exp. 64; Cov., Fl. Ark. 166; Wats., Bibl. Ind. I, 62; Webb., Appx. Neb. 30.

North America: Saskatchewan and prairie-region of Can. to Calif., Colo., Arizona and Mexico; E. to Tex., Ohio and Minn.

Minn. valley: W. and S. W. portions, only; dry sandy prairie at higher levels.

HERB.: *Sheldon 1407*, Lake Benton.

Erysimum cheiranthoides LINN. Spec. 661 (1753).

E. parviflorum PERS. Syn. II, 199 (1807).

Wats. and Coult., Gray's Man. 6 ed. 71; Britt., Fl. N. J. 51; Webb., Fl. Neb. 118; Coult., Fl. Colo., 22; Hook., Fl. Gt. Brit. 31; Upham, Fl. Minn. 25; Trautv., Fl. Sib. 27; Regel, Fl. O.-Sib. I, 206; Mac., Fl. Can. I, 45, 487; Nym., Fl. Eur.; Led., Fl. Ross. I, 189; Herd., Fl. Russ. Eur. 16; Engl. Prantl, Nat. Pflanz. III, 2, 193; Roth., Wheel. Exp. 64; Wats., King Exp. 24; Wats., Bibl. Ind. I, 63; Forbes and Hems., Fl, Sin. I, 46; Cov., Fl. Ark. 166; Hart., Fl. Scand. I, 186.

N. Europe; N. Asia; N. Africa.

North America: Can. throughout, east of Rocky mts.; N. to lat. 67° on the Mackenzie river and in Alaska; S. in mts. to Colo.; E. to Minn , Neb., Ark., Penn., N. J. and Mass.

Minn. valley: Throughout; marshy meadows; wooded banks of lakes and streams; edges of thickets.

HERB.: *Ballard 110,* Shakopee; *Taylor 857,* Glenwood; *Taylor 902,* Glenwood; *Taylor 1006,* Glenwood; *Ballard 284,* Jordan, Scott Co.; *Taylor 412,* Buffalo lake, Waseca Co.; *Sheldon 1092,* Springfield; *Sheldon 559,* Waseca; *Sheldon 1408,* Lake Benton; *Ballard 754,* Waconia; *Taylor 631,* Minnesota lake; *Sheldon 883,* Sleepy Eye; *Herrick 39,* Minneapolis; *Holzinger 21,* Winona Co.; *Kassube 30,* Minneapolis; *Herrick 40,* Minneapolis; *Sandberg 65,* Cannon Falls; *Holzinger 22,* Winona Co., *Herb. Sheld. 1912,* Minneapolis; *Herb. Wickersheim 16,* Idlewild, Lincoln Co.; *Herb. Moyer 30,* Montevideo.

XLVI. CAPPARIDACEAE. Caper Family.

Endlicher, *Gen. Pl.* 889 (1840); Benth. and Hook., *Gen. Pl.* I, 103 (1862): Pax, *Engler and Prantl, Nat. Pflanz.* 3, II, 209 (1891); Baillon, *Hist. Pl.* III, 145 (1872).

Genera: 34; (Baillon, 17) and 1 fossil; warmer and tropical regions; frutescent forms strongly American.

Species: 350±; a few fossil, poorly known.

CLEOME LINN. Gen. 550 (1737).

Dianthera KLOTZSCH, Pet. Mosz. Bot. 160 (1858?).
Siliquaria and **Roridula** FORSK. Fl. Aeg. Arab. 35, 78 (1775).
Rorida R. and S. Syst. III, 13 (1818).
Atalanta NUTT. Gen. II, 73 (1818).
Peritoma DC. Prodr. I, 237 (1824).
Buhsia BUNGE, Linn. XXX, 752 (1859).
Anomalostemon KLOTZSCH, l. c. (1858?).

Baillon, *Hist. Pl.* III, 173; Benth. and Hook., *Gen. Pl.* I. 105; Engler and Prantl, *Nat. Pflanz.* 3, II, 222 (Pax); Durand, *Ind. Gen. Phan.* 20; Gray. *Ill. Gen.* I, 175; O. Kuntze, *Rev. Gen.* I, 38.

Living species: 70±; tropical and subtropical regions, especially in S. America, where they are also subalpine and in Egypt and Arabia. Europe, 2; Japan, 0; North America, 6; Russia, 3; Calif., 3; Canada, 2; Rocky mts., 3; Pl. King, 4; S. Sts., 1; E. Sts., 1.

Cleome serrulata PURSH, Fl. Am. 441 (1814).

Peritoma integrifolia NUTT. Journ. Acad. Phil. VII, 14 (1842).
Peritoma serrulatum DC. Prodr. I, 237 (1824).
Cleome integrifolia T. and G. Fl. I, 122 (1838).

Wats. and Coult., Gray's Man. 6 ed. 75; Webb., Fl. Neb. 119; Coult., Fl. Colo. 28; Upham, Fl. Minn. 28; Mac., Fl. Can. I, 59; Roth., Wheel Exp. 67; Wats., King Exp. 32; Wats., Bibl. Ind. I, 76.

North America: Minn., Neb. and Kan.; W. to Colo., Mont. and adjacent Can.

Minn. valley: Blue Earth Co. and doubtless W. to Dakota line; local; sandy and waste places.

HERB.: *Leiberg 11*, Mankato.

JACKSONIA RAF. Med. Rep. N. Y., V. 352 (1808).

Polanisia RAF. Jour. Phys. LXXXIX, 98 (1819).
Corynandra SCHRAD. Ind. Sem. Gött. (1846).
Ranmanissa ENGL. Gen. 4988 *b* (1836-40).
Tetratelaia SOND. Fl. Cap. I, 58 (1859).
Chilocalyx, Decastemon and **Symphyostemon** KLOTZSCH, Pet. Mosz. Bot. 154 (1858).

Baillon, *Hist. Pl.* III, 173; Benth. and Hook., *Gen. Pl.* I, 106, 968; Durand, *Ind. Gen. Phan.* 21; Engler and Prantl, *Nat. Pflanz.* 3, II, 224 (Pax); Gray, *Ill. Gen.* I, 181; O. Kuntze, *Rev, Gen.* I, 38.

Living species: 30±; 14 (B. and H.); 15 (Durand); tropical and subtropical regions; 1 sp. in both hemispheres. North America, 4; Canada, 2; W. Tex., 2; S. Sts., 2; E. Sts., 2; King Pl., 1; Pl. Wheel., 2.

Jacksonia dodecandra (MICHX.).

Cleome dodecandra MICHX. Fl. Am. II, 32 (1803).
Jacksonia trifoliata RAF. Med. Repos. 352 (1808).
Polanisia graveolens RAF. Journ. Phys. 98 (1819).
Cleome viscosa SPRENG. Syst. II, 125 (1825) *in part.*
Polanisia dodecandra B. S. P. Cat. N. Y. 6 (1888).

Wats. and Coult., Gray's Man. 6 ed. 75; Britt., Fl. N. J. 53, Webb., Fl. Neb. 119; Coult., Fl. Colo. 27;Upham, Fl Minn. 28; Mac., Fl. Can. I, 59, 491; Engl. Pax, Nat. Pflanz. III, 2, 224; Roth., Wheel. Exp. 68; Cov., Fl. Ark. 167; Wats., Bibl. Ind. I, 77.

North America: Q., Ont., L. Huron to N. W. T.; S. to Minn., Dak., Neb., Kan., Ark., Colo. in the west and Conn., Vt., N. J., Penn., Chesapeake bay; region S. of Gt. lakes,

Minn. valley: Throughout; sandy and drift covered places; along railway embankments; frequent.

HERB. *Sheldon 699*, Waseca; *Sheldon 490*, Madison Lake; *Taylor 645*, Minnesota lake; *Sheldon 1217*, New Ulm; *Sheldon 1268*, Lake Benton; *Sheldon 803*, Sigel township, Brown Co.; *Taylor 840*, Glenword; *Ballard 683*, Waconia; *Ballard 766*, Waconia; *Leonard 5*, Minneapolis; *Leiberg 10*, Blue Earth Co.; *Holzinger 26*, Winona; *Oestlund 15*, Minneapolis; *Kassube 34*, Minneapolis; *Sandberg 72*, Cannon Falls; *Herb. Wickersheim 18*, Idlewild, Lincoln Co.

XLVII. SARRACENIACEAE. Pitcher-Plant Family.

Endlicher, *Gen. Pl.* 901 (1840); Benth. and Hook., *Gen. Pl.* I, 48 (1862); Baillon, *Hist. Pl.* III, 89 (1871)—under *Nymphaeaceae*. Wunschmann, *Engler and Prantl, Nat. Pflanz.* 3, II. 244 (1891).

Genera: 3; America; *Sarracenia* Linn. in Atl. N. America; *Chrysamphora* Greene, in Pac. N. America; *Heliamphora* Benth., in mts. of British Guiana.

Species: 8; 75 per cent. in *Sarracenia.*

SARRACENIA LINN. Gen. 420 (1737).

Baillon, *Hist. Pl.* III, 103; Benth. and Hook., *Hist. Pl.* I, 48; Engler and Prantl, *Nat. Pflanz.* 3, II, 251 (Wunschmann); Durand, *Ind. Phan.* 10; Gray, *Ill. Gen.* I, 107.

Living species: 6; 8 (Durand); Atlantic, and forest region, North America; S. Sts., 6; E. Sts., 2; Canada, 1–2.

Sarracenia purpurea LINN. Spec. 510 (1753).

Wats. and Coult., Gray's Man. 6 ed. 57; Britt. Fl. N. J. 44; Chap., Fl. S. St. 20; Upham, Fl. Minn. 22; Mac., Fl. Can. I, 33; Engl. Wunschm., Nat. Pflanz. III, 2, 251; Wats., Bibl. Ind. I, 39.

North America: Labrador and Newf. to N. S. and W. to Brit. Col.; N. to Bear lake and Mackenzie; S. to N. Eng. and Fla.?; W. to Ohio and Minn.

Minn. valley: Only in N. portions of valley from Ft. Snelling to Glenwood; tamarack swamps; peat bogs and wet places.

HERB.: *Taylor 1136*, Glenwood; *Bailey 288*, Vermilion lake; *Kassube 21*, Minneapolis; *Oestlund 11*, Minneapolis; *Herrick 23*, Minneapolis; *Roberts 7*, Duluth; *Sandberg 47*, Center City, Chisago Co.; *Herb. Sheld. 1682*, Minneapolis; *1753*, Ramsey Co.

XLVIII. DROSERACEAE. Sundew Family.

Endlicher, *Gen. Pl.* 906 (1840); Benth. and Hook., *Gen. Pl.* I, 661 (1865):

Baillon, *Hist. Pl.* IX, 225 (1888); Drude, *Engler and Prantl, Nat. Pflanz.* 3, II, 261 (1891).

Genera: 6; widely distributed, especially in Australia, Brazil, Cape of Good Hope and S—E. N. America.

Species: 100±; 90 per cent. in genus *Drosera.*

DROSERA LINN. Gen. 253 (1737).
Sondera LEHM. Pugill. VIII, 44 (1844).
Rossolis TOURN. Inst. 245 (1700).
Rorella RUPP. Fl. Jen. (1718).
Esera NECK. Elem. 859 (1790).

Baillon, *Hist. Pl.* IX, 233; Benth. and Hook., *Gen, Pl.* I, 662; Durand, *Ind. Gen. Phan.* 120; Engler and Prantl, *Nat. Pflanz.* 3, II, 270 (Drude); Gray, *Ill. Gen.* I, 193.

Living species: 90±; 100 (B. and H.); in all regions except Pac. isls.; very abundant in extra-tropical Australia. Russia, 3; Europe, 3–5; N. America, 8; Canada, 4; E. Sts., 4; S. Sts., 5; Calif., 2.

Drosera linearis GOLDIE, Edin. Phil. Journ. VI, 325 (1822).

Wats. and Coult., Gray's Man. 6 ed. 178; Upham, Fl. Minn. 30; Mac. Fl. Can. I, 166; Wats., Bibl. Ind. I, 354.

North America: Ont., Man. to Rockies; around L. Superior in Mich., Wis. and Minn.

Minn. valley: Far N. E. in valley and perhaps also in N. W.; bogs and mossy logs in deep woods.

Drosera intermedia DREV. and HAYNE, var. **americana** (WILLD.) DC. Prodr. I, 318 (1824).

Species: [*D. intermedia* DREV. and HAYNE, Abbild. Deutsch Gewach. I, 18 (1794-1801)].
D. foliosa ELL. Sk. I, 376 (1821).
D. longifolia LINN. Spec. 282 (1753) *in part.*
Variety: D. americana WILLD. Enum. 340 (1809).

Wats. and Coult., Gray's Man. 6 ed. 178; Chap., Fl. S. St. 37; Britt., Fl. N. J. 104; Hook., Fl. Gt. Brit. 150; Upham, Fl. Minn. 30; Brew. and Wats., Fl. Calif. 213; Regel, Fl. O.-Sib I, 258 *in part;* Mac., Fl. Can. I, 166; Led., Fl. Ross. I, 262; Nym., Fl. Eur.; Gris., Fl. W. I.; Herd., Fl. Eur. Russ. 22; Engl. Drude, Nat. Pflanz. III, 2, 271: Wats., Bibl. Ind. I, 354: Mac., Fl. Can. I, 529; Hart , Fl. Scan. I, 227 (*spec.*).

Species in N. Eur.; W. Asia; Kamtk.; Brazil. It is not the *D. longifolia* of Linn., which is a more comprehensive species, including also *D. anglica* Huds. It is, however, the *D. longifolia* of Michx. Fl. I, 186 (1803).

North America: Same range as that of *D. rotundifolia,* except that it extends only to 53° N. lat. and is not reported from the Pac. coast.

Minn. valley: Forest district, far N. W.; not common; peat bogs.

HERB.: *Herrick 48*, Minneapolis.

Drosera rotundifolia LINN. Spec. 282 (1753).

Wats. and Coult., Gray's Man. 6 ed. 178; Britt., Fl. N. J. 104; Chap., Fl. S. St. 37; Brew. and Wats., Fl. Calif. I, 213; Upham, Fl, Minn. 30; Hook., Fl. Gt. Brit. 150; Regel, Fl. O.-Sib. I, 257; Mac., Fl. Can. I, 165; Led., Fl. Ross. I, 261; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 22; Engl. Drude, Nat. Pflanz. III, 2, 271; Wats., Bibl. Ind. I, 234; Hart., Fl. Scand. I, 227; Rothr., Alask. 444.

Arctic, N. and C. Europe; N. and W. Asia.

North America: Newf., Labrador, N, S. to Man. and Pac.; N. in arctic circle; S. in mts. to Mendocino Co., Calif.; along N. U. S. to Indiana and N. J.; S. in Appallachians to Florida.

Minn. valley: Forest district; Ft. Snelling to Blue Earth Co.; peat bogs.

HERB.: *Sheldon 353*, marshes S. of Lake Madison, Blue Earth Co.; *Taylor 1102*, Glenwood; *Roberts 16*, Minnesota Point; *Herrick 46*, Minneapolis; *Oestlund 18*, Ramsey Co.; *Kassube 41*, Rocky lake, Hennepin Co.

XLIX. CRASSULACEAE. Orpine Family.

Endlicher, *Gen. Pl.* 808 (1840); Benth. and Hook., *Gen. Pl.* I, 656 (1865); Baillon, *Hist. Pl.* III, 305 (1872); Schönland *in Engler and Prantl*, Nat. Pflanz. 3, II*a*, 23 (1890).

Genera: 7-13; cosmopolitan; abundant in S. Africa.
Species: 375±.

PENTHORUM LINN. Gen. Corr. 957 (1737).

Baillon, *Hist. Pl.* III, 430; Benth. and Hook., *Gen. Pl.* I, 661; Durand, *Ind. Gen. Phan.* 119; Engler and Prantl, *Nat. Pflanz.* 3, II*a*, 38 (Schönland).

Living species: 2; 1, E. North America; 1, China.

Penthorum sedoides LINN. Spec. 432 (1753),

Wats. and Coult., Gray's Man. 6 ed. 176; Britt., Fl. N. J. 104; Mac., Fl. Can. I, 164; Webb., Fl. Neb. 125; Upham, Fl. Minn. 56; Chap., Fl. S. St. 151; Forbes and Hems., Fl. Sin. 228; Mac., Fl. Can. I, 528; Cov., Fl. Ark. 181; Engl. Schönl., Nat. Pflanz. III, 2, 38; Wats., Bibl. Ind. I, 350.

Manchuria; Japan; China.

North America: N. Br., Q., Ont. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Kan., Ark. and Tex.

Minn. valley: Throughout at lower levels; open and wet localities.

Herb.: *Ballard 813*, Page lake, Carver Co.; *Ballard 444*, Prior's lake, Scott Co.; *Ballard 611*, Chaska; *Sheldon 1371*, Lake Benton; *Ballard 694*, Waconia; *Sheldon 1197*, New Ulm; *Herrick 109*, Minneapolis; *Kassube 92*, Minneapolis; *Holzinger 78*, Winona Co.; *Sandberg 201*, Cannon Falls; *Herb. Moyer 84*, Montevideo (a very large-leaved form).

L. SAXIFRAGACEAE. Saxifrage Family.

Endlicher, *Gen. Pl.* 813 (1840); 823—*Ribesiaceae;* 1186, *Philadelpheae;* Lindl. Veg. King. 752, 569, 573, 750. 451 (1846) —*Escalloniaceae, Hydrangeaceae, Brexiaceae, Grossulariaceae. Francoaceae;* DC. Prodr. VII, 521 (1838–39); Benth. and Hook., *Gen. Pl.* I, 629 (1865)—excl. Trib. V, *Cunonieae;* Baillon, *Hist. Pl.* III, 325 (1872) *in part;* Engler *in Engler and Prantl, Nat. Pflanz.* 3, II *a*, 41 (1890).

Genera: 60; widely distributed.
Species: 450±; mostly "glacial plants."

SAXIFRAGA Linn. Gen. 368 (1737).

Megasea, Antiphylla, Chondrosea, Muscaria, Lobaria, Spatularia, Dermasea, Aulaxis, Robertsonia, Miscopetalum, Leptasea, Hirculus, Ciliaria Haw. Enum. Sax. (1821).
Ligularia Duval, Pl. Succ. 11 (1819).
Kingstonia Gray, Brit. Pl, II, 531 (1821).
Zahlbrucknera Reich. Fl. Germ. Excurs. 551 (1832).
Diptera Borkh. ex Baill. Adans. V, 282 (1865).
Hydatica Neck. Elem. (1790).
Oreosplenium Zahlbr. ex Baill. Adans. V, 282 (1865).
Geryonia Schur. Transsylv. Enum. (1866).
Bergenia Moench, Meth. (1794).

Baillon, *Hist. Pl.* III, 424; Benth. and Hook., *Gen. Pl.* I, 635, 636; Durand, *Ind. Gen. Phan.* 116; Engler and Prantl, *Nat. Pflanz.* 3, II *a*, 52 (Engler); Schenck, *Palaeophyt.*617.

Living species: 200±; mts. and arctic regions of N. hemisphere; a few widely distributed as glacial plants (Engler). Also, in the Andes of S. America. 160 (B. and H.); 180 (Durand). Russia, 57; Europe, 120 (in the Alps, for the most part); Russian Europe, 20; North America, 45; Canada, 35; Rocky mts., 18–20; California, 10; E. Sts., 11; Pl. King, 7; Pl. Wheel., 11; Alaska, 25±.

Fossil species: *S. oppositifolia*, Quaternary, England and Denmark.

Saxifraga pennsylvanica Linn. Spec. 399 (1753).
S. semipubescens Sweet, Hort. Suburb. 97 (1818).
S. palustris Link, Enum. I, 412 (1821).
Micranthes pennsylvanica Haw. Enum. Sax. 45 (1821).
Evaiezoa pennsylvanica Raf. Fl. Tell. II, 71 (1836).

Wats. and Coult., Gray's Man. 6 ed. 170; Britt., Fl. N J. 101; Upham, Fl. Minn. 55: Mac., Fl. Can. I, 523; Engl., Nat. Pflanz. III; 2, 56; Wats., Bibl. Ind. I, 344.

North America: Ont. to N. Eng., N. J. and Va.; W. to Minn. and Iowa.

Minn. valley: N. E. district, and probably in whole forest district; tamarack swamps and bogs.

HERB.: *Ballard 2*, Chaska; *Kassube 90*, Minneapolis; *Holzinger 76*, Winona Co.; *Bailey 329*, St. Louis river; *Sandberg 196*, Goodhue Co.

TIARELLA LINN. Gen. ed. V, 495 (1754).

? **Blondea** NECK. Elem. 786 (1790).

Baillon, *Hist. Pl.* III, 426; Benth. and Hook., *Gen. Pl.* I, 637; Durand, *Ind. Gen. Phan.* 116; Engler and Prantl, *Nat. Pflanz.* 3, II *a*, 61 (Engler).

Living species: 5 described; 4 reduced (Engler); Himalayas and Japan 1; North America, 3; Canada, 3; E. Sts., 1; Rocky mts., 1; California, 1; S. Sts., 1. The included species (*T laciniata* Hook.) is also Canadian.

Tiarella cordifolia LINN. Spec. 405 (1753).

Wats. and Coult., Gray's Man. 6 ed. 171; Britt., Fl. N. J. 101, Mac., Fl. Can. I, 156; Upham, Fl. Minn. 56; Chap., Fl. S. St. 154; Led., Fl. Ross. II, 229; Engl., Nat. Pflanz 3, II *a*, 61; Wats., Bibl. Ind. I, 348.

N. W. Asia and Baikal Siberia.

North America: N. S., N. Br., Q., Ont. to N. Eng., N. J. and Penn.; W. to Ind. and Minn., and S. in Appallachians to Miss.

Minn. valley: Reported from Blue Earth Co. and probably sparingly throughout the forest district; rare; rocky places in woods.

HEUCHERA LINN. Gen. 196 (1737).

Baillon, *Hist. Pl.* III, 426; Benth. and Hook., *Gen. Pl.* I, 628; Durand, *Ind. Gen. Phan.* 116; Engler and Prantl, *Nat. Pflanz.* 3, II *a*, 62.

Living species: 24; Atlantic and Pacific N. America and mts. of Mexico. Canada, 7–8; Rocky mts., 10; California, 5; E. Sts., 5; S. Sts., 6; Pl. King, 4; Pl. Wheel., 3; W. Tex., 1.

Heuchera hispida PURSH, Fl. Am. 188 (1814).

H. richardsonii R. BR. Frankl. Journ. 766 (1823).

H. lucida SCHLECHT. Ind. Sem. Hal. (1848).

Wats. and Coult., Gray's Man. 6 ed. 172; Webb., Fl. Neb. 125; Mac., Fl. Can. I, 158; Upham, Fl. Minn. 55; Coult., Fl. Colo., 94; Chap., Fl. S. St. 152; Engl., Nat. Pflanz. 3, II*a*, 62; Wats., Bibl. Ind. I, 325; Wheelock, Torr. Bull. XVII, 198.

North America: Va. and N. Car. to Minn., Neb., Kan.; up Missouri river to Rocky mts., Canada; Saskatch.

and Man. to Peace river and Hudson Bay; lat. 54° N. to lat. 64° N.

Minn. valley: Throughout; common on exposed hillsides, rocky ledges and high bluffs or headlands.

HERB.: *Taylor 859*, Glenwood; *Sheldon 1174*, New Ulm; *Sheldon 1485*, Pipestone city; *Sheldon 785*, Sleepy Eye; *Ballard 100*, Shakopee; *Ballard 189*, Jordan, Scott Co.; *Sandberg 197*, Red Wing; *Kassube 91*, Minneapolis; *Bailey 431*, Basswood lake; *Oestlund 56*, Minneapolis; *Herb. Sheld. 1878*, Minneapolis; *Herb. Moyer 83*, Carlton lake, Chippewa Co.

Heuchera americana LINN. Spec. 226 (1753).

H. scapigera MOENCH, Meth. 674 (1794).
H. cortusa MICHX. Fl. N. Am. I, 171 (1803).
H. viscida PURSH, Fl. Am. 187 (1814).
H. foliosa RAF. Herb. Torr.
H. reniformis RAF. Herb. Phil. Acad. Sci.

Wats. and Coult., Gray's Man. 6 ed. 172; Mac , Fl. Can. I, 158; Britt., Fl. N. J. 101; Upham, Fl. Minn. 55; Chap., Fl. S. St. 152; Cov., Fl. Ark. 180; Engl., Nat. Pflanz. 3, II *a*, 62; Wats., Bibl. Ind. I, 324; Wheelock, Torr. Bull. XVII, 195.

North America: S. Ont., N. Y., Conn., N. J. to Va. and N. Car.; W. to Minn., Mo.. Ark. and Miss.

Minn. valley: Reported from N. E. and E. edge; rare; rocky woodlands.

HERB.: *Hammond 1*, Lake City:

MITELLA LINN. Gen. ed V, 496 (1754).

Drummondia DC. Prodr. IV, 49 (1830).
Mitellopsis MEISSN. Gen. 136 (1843).
? **Oreanthus** RAF. Ser. Bull. Bot. I, 216 (1830).

Baillon, *Hist. Pl.* III, 425; Benth. and Hook., *Gen. Pl.* I, 638; Durand, *Ind. Gen. Phan.* 116; Schenck, *Palaeophyt.* 617; Engler and Prantl, *Nat. Pflanz.* 3, II *a*, 63.

Living species: 7; North America, 6; Japan, 1; Canada, 6; Rocky mts., 2; Calfornia, 3; S. Sts., 1; E. Sts. 2; Pl. King, 2.

Fossil species: Amber, Germany? (*Caspary*).

Mitella nuda LINN. Spec. 406 (1753 .

M. reniformis LAM. Ill. II, 395 (1793).
M. cordifolia LAM. Ill. II, 395 (1793).
M. prostrata MICHX. Fl. N. Am. I, 270 (1803).

Wats. and Coult., Gray's Man. 6 ed. 171; Mac., Fl. Can. I, 157; Upham, Fl. Minn. 55; Brew. and Wats., Fl. Calif. I, 200; Led., Fl. Ross. II, 228; Engl., Nat. Pflanz. 3, II *a*, 63; Wats., Bibl. Ind. I, 328.

W. and Baikal Siberia; N. and E. Siberia to Amurland.

North America: Labrador, N. S., N. B., Newf. to

Brit. Col., Arctic sea and Alaska; S. to N. Eng., N. Y., Mich., Minn., Dak. and Man.

Minn. valley: N. E. district and N. edge; mossy logs and deep woods; with *Drosera;* rare.

HERB.: *Herrick 108,* Minneapolis; *Sandberg 199,* Tower; *Roberts 38,* Grand Marais; *Bailey 388,* Mud lake; *Bailey 88,* Vermilion lake; *Sandberg 200,* Tower.

Mitella diphylla LINN. Spec. 406 (1753).

Wats. and Coult., Gray's Man. 6 ed. 171; Britt., Fl. N. J. 101; Mac., Fl. Can. I, 156; Upham, Fl. Minn. 55; Chap., Fl. S. St. 154; Led., Fl. Ross. II, 228?; Engl., Nat. Pflanz. 3, II*a*, 63; Wats., Bibl. Ind. I, 328.; Brew. and Wats., Fl. Calif. I, 200.

E. Siberia?.

North America: Q., Ont., N. Eng., N. J. to N. Car.; W. to Minn. and Mo.; also Calif. and Oregon.

Minn. valley: Forest district; rich woods and along streams.

HERB.: *Holzinger 77,* Winona Co.; *Leiberg 18,* Blue Earth Co.; *Sandberg 198,* Vasa; *Hammond 20,* Lake City; *Herb. Sheld. 1717,* Minneapolis; *Herb. Sheld. 1882,* Ramsey Co.; *Herb. Wickersheim 50,* Mankato.

CHRYSOSPLENIUM LINN. Gen. 356 (1737).

Baillon, *Hist. Pl.* III, 425; Benth. and Hook., *Gen. Pl.* I, 638; Durand, *Ind. Gen. Phan.* 116; Engler and Prantl, *Nat. Pflanz.* 3, II a, 64 (Engler); Franchet, *Mon. Chrys.* (1891).

Living species: 54 (Franchet); 40 (Engler); 15 (Benth. and Hook.); 5, Amurland, 2 of these in Chile and Magellan; 3, N. America; 3, Europe; the rest in Himalayas, China and Manchuria; Canada, 2; Rocky mts. 1; S. Sts., 1; E. Sts., 2.

Chrysosplenium americanum SCHWEIN. Hook. Fl. Bor.-Am. I, 242 (1833).

C. oppositifolium WALT. Fl. Car. 140 (1788) *not Linn.*

Wats. and Coult., Gray's Man. 6 ed. 172; Britt., Fl. N. J. 101; Mac., Fl. Can. I, 158; Chap., Fl. S. St. 154; Engl., Nat. Pflanz. 3, II, 64; Wats., Bibl. Ind. I, 324.

North America: N. S., N. Br., Q., Ont. to Saskatchewan; S. to N. Eng., N. J. and N. Ga.; W. to Minn.

Minn. valley: Reported from N. edge and from far N. W.; wet places and bogs, with *Parnassia;* rare.

PARNASSIA LINN. Gen. 250 (1737).

Pyrola MOR. ex Adans. Fam. Pl. II, 449 (1763).

Euneadynamis GESN. ex Adans. l. c. (1763).

Baillon, *Hist. Pl.* III, 431; Benth. and Hook., *Gen. Pl.* I, 639; Durand, *Ind. Gen. Phan.* 117; Engler and Prantl, *Nat. Pflanz.* 3, II a, 66 (Engler).

Living species: 19; N. extra-tropical regions, mts. 12 (B. and H.); 14 (Durand); Russia, 9; Europe, 2; Russian-Europe, 2; North America, 6; Canada, 5; Rocky mts., 3–4; E. Sts., 4; Pl. King, 2; Pl. Wheel., 2; California, 2.

Parnassia caroliniana MICHX. Fl. N. Am. I, 184 (1803).

P. americana and *ovata* MUHL. Cat. 32 (1813).

P. palustris PURSH, Fl. Am. 208 (1814).

P. rotundifolia, *grandiflora*, *glauca*, *repanda* RAF. Aut. Bot. 41, 42 (1836).

Wats. and Coult., Gray's Man. 6 ed. 173; Mac., Fl. Can. I, 159, 527; Britt., Fl. N. J. 102; Upham, Fl. Minn. 55; Chap., Fl. S. St. 38; Cov., Fl. Ark. 181; Engl., Nat. Pflanz. 3, II, 67; Wats., Bibl. Ind. I, 329.

North America: Anticosti, N. Br., Ont. to L. Huron reg. and Man.; S. to N. Eng., N. J., Fla.; W. to Minn., Iowa and Ark. to La.

Minn. valley: N. E. and N. W. districts; bogs and cold marshes; probably also in whole forest district.

HERB.: *Taylor 1011*, Glenwood; *Ballard 619*, Shakopee; *Oestlund 55*, Minneapolis; *Herrick 107*, Minneapolis; *Sandberg 195*, Red Wing; *Herb. Sheld. 1665*, Minneapolis.

Parnassia palustris LINN. Spec. 273 (1753).

Wats. and Coult., Gray's Man. 6 ed. 173; Mac., Fl. Can. I, 159; Coult., Fl. Colo. 95; Hook., Fl. Gt. Brit. 143; Trautv., Fl. Sib. 29; Upham, Fl. Minn. 55; Forbes and Hems., Fl. Sin. I, 272; Led., Fl. Ross. I, 262; Regel, Fl. O.-Sib. I, 259; Nym., Fl. Eur.; Mac., Fl. Can. I, 527; Miyabe, Fl. Kur. 234; Herd., Fl. Eur. Russ. 56; Engl., Nat. Pflanz. 3, II, 76; Wats., Bibl. Ind. I, 330; Hart., Fl. Scand. I, 227.

Siberia, Corea, Kuriles, Russia to Caucasus and Carpathian Mts?.

North America: Labrador, Newf. and Maritime provinces to Arctic sea, Brit. Col., Pac. and Alaska; S. to Mich., N. Minn., Mont. and Wyoming.

Minn. valley: N. W. in Chippewa valley and probably sparingly in N. E. district; bogs and springsides.

HERB.: *Taylor 751*, Glenwood; *Taylor 1039*, Glenwood; *MacM.* and *Sheld. 38*, Brainerd.

RIBES LINN. Gen. 195 (1737).

Grossularia TOURN. Inst. 639 (1700).

Botryocarpium RICH. Elem. II, 487 (1831).

Chrysobotrya, **Cerophyllum** and **Coreosma** SPACH, Suit. Buff. VI, 148–180 (1839).

Calobotrya and **Rebis** SPACH, Ann. Sci. Nat. Ser. 2, IV, 21–26 (1835).

Robsonia BERL. Mem. Gen. III, 1 (1823).

Baillon, *Hist. Pl.* III, 446; Benth. and Hook., *Gen. Pl.* I, 654; Durand, *Ind. Gen. Phan.* 119; Schenck, *Palaeophyt.* 622; Engler and Prantl, *Nat. Pflanz.* 3, II a, 88 (Engler).

Living species: 50; N. temperate regions, mts. of Central America and Andes to Magellan. 75, (Durand); Russia, 20+; Europe, 6; Russian Europe, 5; North America, 23, Canada, 17–18; Rocky mts., 13–15; E. Sts., 9; California, 12–14; S. Sts., 5; Pl. King, 11; Pl. Wheel., 7; W. Tex., 2.

Fossil species: Tertiary?; *R. nigrum* in Quaternary, marl beds.

Ribes rubrum LINN. var. **albinervium** (MICHX.).

R. albinervium MICHX. Fl. I, 110 (1803).

R. rubrum var *subglandulosum* MAXIM. Bull. Acad. Petersb. XIX, 256 (1878).

R. rubrum AUCT. AMER.

Wats. and Coult., Gray's Man. 6 ed. 176; Upham, Fl. Minn. 54; Mac., Fl. Can. I, 162; Webb., Fl. Neb. 125; Hook., Fl. Gt. Brit. (spec.) 144; Trautv., Fl. Sib. (spec.) 57; Led , Fl. Ross. (spec.) II, 199; Nym., Fl. Eur. (spec.); Herd., Fl. Eur. Russ. (spec.) 54; Engl., Nat. Pflanz. 3, II, 92 (spec.); Wats., Bibl. Ind. I, 336; Hart., Fl. Scand. I, 252.

Europe and N. and W. Asia to Himalayas (species).

North America: Atl. to Pac., Arctic sea and Alaska, in Canada; S. to N. Eng. and Va.; W. to Ky., Iowa, Minn. and E. Neb. (variety).

Minn. valley: N. E. district and N. edge; reported from N. W. district; cold woods and neighborhood of springs.

HERB.: *Bailey 115*, Vermilion lake; *Kassube 89*, Minneapolis; *Roberts 37*, Little Marais; *Bailey 222*, Vermilion lake; *Bailey 454*, Mud lake; *Herb. Sheld. 1883*, Minneapolis.

Ribes floridum L'HER. Stirp. I, 4 (1784).

R. nigrum var. *B.* LINN. Spec. 201 (1753).

R. nigrum var. *pennsylvanicum* MARSH. Arbust. 132 (1785).

R. campanulatum MOENCH, Meth. 683 (1794).

R. recurvatum MICHX. Fl. N. Am. I, 109 (1803).

Coreosma florida SPACH, Hist. Veg. VI, 157 (1834).

Wats. and Coult., Gray's Man. 6 ed. 176; Britt., Fl. N. J. 103; Mac., Fl. Can. I, 163; Upham, Fl. Minn. 54; Webb., Fl. Neb. 125; Coult., Fl. Colo. 97; Cov., Fl. Ark. 181; Engl., Nat. Pflanz. 3, II, 91; Wats., Bibl. Ind. I, 333.

South America—Andes mts., 2400 m. alt.; Quito.

North America: N. S., N. Br., Q., Ont. to Man. and lat 54° N.; S. to Va., Ky., Iowa, Minn., Neb., Ark. and Colo.; N. Platte river.

Minn. valley: Throughout, common; woods and edges of sloughs.

HERB.: *Sheldon 1600*, Lake Benton; *Sheldon 16*, Elysian; *Herrick 105*, Minneapolis; *Oestlund 54*, Hennepin Co.; *Hol-*

zinger 75, Winona Co.; *Herrick 106*, Minneapolis; *Bailey 108*, Vermilion lake; *Bailey 77*, Vermilion lake; *Kassube 88*, Minneapolis; *Sandberg 194*, Red Wing; *Herb. Sheld. 1880*, Minneapolis; *Herb. Wickersheim 49*, Idlewild; *Herb. Moyer 82*, Chippewa river near Montevideo.

Ribes oxycanthoides LINN. Spec. 201 (1753).

R. hirtellum MICHX. Fl. N. Am. I, 111 (1803).
? *R. triflorum* BIGEL. Fl. Bost. 2 ed. 90 (1824).
R. saxosum HOOK. Fl. Bor.-Am. I, 231 (1833).
Grossularia oxycanthoides and *hirtella* SPACH, Hist. Veg. VI, 175, 180 (1834).
R. irriguum GRAY, Pl. Fendl. 53 (1849).

Wats. and Coult., Gray's Man. 6 ed. 175; Britt., Fl. N. J. 102; Mac., Fl. Can. I, 161; Coult., Fl. Colo. 96; Brew. and Wats., Fl. Calif. I, 206; Wats., King Exp. 97; Roth., Wheel. Exp. 117; Engl. Focke, Nat. Pflanz. 3, II, 90; Wats., Bibl. Ind. I, 335; Greene, Fl. Fran. 199.

North America: N. S., N. Br., Newf. to California; N. to Brit. Col. and Hudson Bay; S. to N. J., Ind., Minn., Colo., Man.; Sierras to 3000 m. alt.

Minn. valley: Reported from E., N. E. and N. W. districts; rare; rocky woods or barren places.

Ribes gracile MICHX. Fl. N. Am. I, 111 (1803).

R. niveum LINDL. Bot. Reg. 1692 (1830).
R. missouriensis NUTT. T. and G. Fl. I, 548 (1838).
R. rotundifolium var. —— ENGELM. Pl. Upp. Miss. 193 (1861).
R. rotundifolium UPHAM, Fl. Minn. 54 (1884).

Wats. and Coult., Gray's Man. 6 ed. 175; Mac. Fl. Can. 161; Chap., Fl. S. St. 145; Coult., Fl. Colo. 96; Webb., Fl. Neb. 125; Engl., Nat. Pflanz. 3, II, 90; Wats., Bibl. Ind. I, 333; Webb., Appx. Neb. 33.

North America: Ont?, Mich. to Minn., Neb,, Colo., Tenn., Rocky mts. and W. Tex.

Minn. valley: Forest district and W. to Pomme des Terre valley; rocky woods and along streams.

HERB.: *Ballard 668*, Waconia; *Sheldon 457*, Madison Lake; *Sheldon 806*, Sigel township, Brown Co.; *Herrick 104*, Minneapolis; *Kassube 87*, Minneapolis; *Sandberg 193*, Red Wing; *Holzinger 74*, Winona; *Herb. Moyer 81*, Chippewa river, near Montevideo.

Ribes cynobasti LINN. Spec. 202 (1753).

R. gracile TORR. Fl. U. S. 269 (1824).
Grossularia cynobasti SPACH, Hist. Veg. VI, 178 (1834).
Ribes oxycanthoides var. *G.* T. and G. Fl. I, 546 (1838).

Wats. and Coult., Gray's Man. 6 ed. 175; Britt., Fl. N. J. 102; Mac., Fl. Can. I, 161, 527; Upham, Fl. Minn. 54; Webb., Fl. Neb. 125; Chap., Fl. S. St. 145; Engl., Nat. Pflanz. III, 3, 91; Wats., Bibl. Ind. I, 332.

North America: N. Br., Q., Ont. to Man.; S. to N. Eng., N. J. and N. Car.; W. to Minn., Neb., Ky., Mo. and to San Francisco mts. of Arizona.

Minn. valley: Throughout, but infrequent far W.; woods and waste places along streams.

HERB.: *Taylor 273*, Janesville; *Sheldon 461*, Madison Lake; *Sheldon 53*, Elysian; *Taylor 804*, Glenwood; *Sheldon 856*, Sleepy Eye; *Ballard 83*, Chaska; *Kassube 86*, Minneapolis; *Sandberg 192*, Goodhue Co.; *Herb. Sheld. 1881*, Minneapolis.

LI. ROSACEAE. Rose Family.

Endlicher, *Gen. Pl.* 1240 (1840); *Chrysobalaneae* Endl. *Gen. Pl.* 1251; *Amygdaleae*, Endl. *Gen. Pl.* 1250; *Pomaceae* Endl. *Gen. Pl.* 1236 (1840); *Drupaceae*, *Sanguisorbaceae* Lindl. *Veg. King.* 559, 561 (1846); Benth. and Hook. *Gen. Pl.* I, 600 (1865); Baillon, *Hist. Pl.* I, 345 (1869); Focke, *in Engler and Prantl*, *Nat. Pflanz.* 3, III, 1 (1888).

Genera: 70±; 90 (Focke); 71 (B. and H.); 66 (Baillon); cosmopolitan.

Species: 1200–1500; two great distributional regions: (1) Pacific coast and border regions; (2) N. temperate zone. Fossil species known from the Tertiary and Recent and even from Upper Cretaceous of N. America, sparingly.

OPULASTER MEDIC. Beitr. Pflanzenanat. II, 109 (1799).
Physocarpos CAMBESS. Ann. Sci. Nat. I, 385 (1824).
Neillia DON, Prodr. Nep. 228 (1825).
Adenileima BL. Bij. 1121 (1826).
Epicostorus RAF. Atl. Jour. 144 (1832),
Physocarpa RAF. Fl. Tell. (1836).
Stephanandra SIEB. ET ZUCC. Abh. Münch. Akad. III, 739 (——).

Baillon, *Hist. Pl.* I, 470, 471; Benth. and Hook., *Gen. Pl.* I, 612; Durand, *Ind. Gen. Phan.* 112; Engler and Prantl, *Nat. Pflanz.* 3, III, 14 (Focke); O. Kuntze, *Rev. Gen. Nachtr.* 949; Schenck, *Palaeophyt.* 674.

Living species: 9, in three distinct sections (*Neillia*, *Physocarpos* and *Stephanandra*); North America; N. Asia to Himalayas; S. China and Japan. North America, 2 sp.; 1, Rocky mts. and Calif.; 1, E. Sts.

Fossil species: *O. opulifolius* (Linn.) in Tertiary of Siberia; also, Alaska? Hungary? (*Heer*, *Unger*).

Opulaster opulifolius (LINN.) OK. Rev. Gen. II, 949 (1891).
Spiraea opulifolia LINN. Spec. 489 (1753).
S. caroliniana MARSH. Arbust. Amer. 146 (1785).
Opulaster bullatus MED. Pflanzenanat. II, 109 (1799)
Physocarpos opulifolius RAF. N. Fl. III, 73, 74 (1836
Neillia opulifolia B. and H. Gen. Pl. I, 612 (1865).

Wats. and Coult., Gray's Man. 6 ed. 153; Britt., Fl. N. J. 92; Webb., Fl. Neb. 129; Chap., Fl. S. St. 120; Upham, Fl. Minn. 48; Brew. and Wats., Fl. Calif. I, 171; Herd., Fl. Eur. Russ. 46; Coult, Fl. Colo. 78; Mac., Fl. Can. I, 127; Wats., Bibl. Ind. I, 289; Wats., King Exp. 80; Roth., Wheel. Exp. 110; Cov., Fl. Ark. 179; Engl. Focke, Nat. Pflanz. 3, III, 14.

North America: Q., Ont. to Man. and Saskatchewan; W. to Vancouver in var.; N. England to Fla.; W. to Minn., Kan., Colo., Neb,, Ark., Calif. to Brit. Col.

Minn. valley: Forest district, especially N. E.; probably also far N. W.; rocky banks and edges of sloughs.

HERB.: *Kassube 64,* Minneapolis; *Sandberg 155,* Goodhue Co.; *Oestlund 39,* Minneapolis; *Herrick 86,* Minneapolis; *Sandberg 156,* Cannon Falls.

SPIRAEA LINN. Gen. 409 (1737).

Petrophytum NUTT. ex B. and W. Fl. Calif. I, 170 (1880).

Baillon, *Hist. Pl.* I, 469; Benth. and Hook., *Gen. Pl.* I, 611; Durand, *Ind. Gen. Phan.* 112; Engler and Prantl, *Nat. Pflanz.* 3, III, 14; Schenck, *Palaeophyt.* 674.

Living species: 40±; temperate Northern hemisphere and a few in mts. under the tropics. Russia, 16; Europe, 11; North America, 4–5; Mexico, 1; E. Sts., 3; Rocky mts., 3; W. coast region, 3; Oregon and Canada, 3.

Fossil species: Several described. Oeningen, Tertiary 1 sp. (*Heer*); Alaska, 2–3 (*Heer*); Leoben (*Ettinghausen*).

Spiraea tomentosa LINN. Spec. 489 (1753).

S. ferruginea, glomerata, rosea RAF. N. Fl. III, 62, 63 (1836).

Wats. and Coult., Gray's Man. 6 ed. 153; Britt., Fl. N. J. 93; Upham, Fl. Minn. 48; Chap., Fl. S. St. 120; Mac., Fl. Can. I, 126; Cov., Fl. Ark. 179; Engl. Focke, Nat. Pflanz. 3, III, 15; Wats., Bibl. Ind. I, 322.

North America: N. S., N. Br., Q., Ont. to N. Eng., N. J. and Ga.; W. to Minn., Kan. and Ark.

Minn. valley: Ft. Snelling and far N. E. in Dakota Co.; edges of sloughs and forest marshes.

HERB.: *Sandberg 159,* Chisago Co.

Spiraea salicifolia LINN. Spec. 489 (1753).

S. tomentosa var. *alba* MARSH. Arbust. Amer. 147 (1785).
S. carpinifolia WILLD. Enum. 540 (1809).
S. amoena, ciliata, obovata RAF. N. Fl. III, 64–66 (1836).

Wats. and Coult., Gray's Man. 6 ed. 153; Britt., Fl. N. J. 93; Wats., Bibl. Ind. I, 322; Upham, Fl. Minn. 48; Chap., Fl. S. St. 121; Trautv., Fl. Sib. 48; Hook., Fl. Gt. Brit. 116; Mac., Fl. Can. I, 126; Forbes and Hems., Fl. Sin. 227; Led., Fl. Ross. II, 15; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 46; Engl. Focke, Nat. Pflanz. 3, III, 15; Hart., Fl. Scand. I, 292; Rothr., Alask. 445.

S. and Mid. Russ. to Hungary; all Siberia and Manchuria; China; intro. in W. Europe.

North America: Newf., N. S. to Rocky mts.; N. on Mackenzie to Arctic sea; Alaska; S. to N. Eng., N. J. and Ga.; W. to Minn., Mo. and Ark.

Minn. valley: Throughout; wet places, edges of prairie sloughs and forest-meadows.

HERB.: *Ballard 508*, Prior's lake, Scott Co.; *Ballard 721*, Benton, Carver Co.; *Ballard 877*, Waconia; *Taylor 866*, Glenwood; *Sheldon 356*, Smith's Mills, Blue Earth Co.; *Taylor 719*, Minnesota lake; *Sheldon 920*, Sleepy Eye; *Sheldon 615*, Wilton, Waseca Co.; *Herrick 87*, Minneapolis; *Sandberg 157*, Red Wing; *Kassube 64*, Minneapolis; *Bailey 95*, Vermilion lake; *Herb. Moyer 69*, Chippewa Co.

PIRUS LINN. Gen. 145 (1737).

Sorbus LINN. Gen. 144 (1737).
Malus RUPP. Fl. Jen. ed. 3, 141 (1745).
Cydonia, Malus, Sorbus, Pirus TOURN. Inst. 628, seq. (1700).
Torminalis, Lazarolus, Aucuparia and **Chamaemespilus** MEDIC. Phil. Bot. I, 134–138 (1789).
Pirophorum, Apirophorum NECK. Elem. II, 72 (1790).
Hahnia MEDIC. Gesch. Bot. 81 (1793).
Azarolus BORKH. Handb. Forst. Bot. II, 1224 (1800).
Aronia PERS. Syn. II, 39 (1807) excl. *Amelanchier*.
Aria HOST. Fl. Austr. II, 7 (1831).
Cormus SPACH, Suit. Buff. II, 96 (1834).
Torminaria ROEM. Syn. Monog. III, 101 (1847).
Micromeles DECNE. Nouv. Arch. Mus. X, 168 (1861).
Chloromeles DECNE. Fl. Serr. XXIII, 156 (——).

Baillon, *Hist. Pl.* I, 475; Benth. and Hook., *Gen. Pl.* I, 626: Durand, *Ind. Gen. Phan.* 114: Engler and Prantl, *Nat. Pflanz.* 3, III, 22 (Focke); Schenck, *Paleophyt.* 671; Sargent, *N. Am. Silva* IV, 67.

Living species: 50–60 or less; temperate N. hemisphere, mts. of tropical India. Russia, 20; Himalayas, 22; Europe, 15; Russian Europe, 11; N. America, 7; Canada, 6; E. Sts., 5; S. Sts., 4; Mid. Calif., 1; Rocky mts., 1; Pl. King, 1.

Fossil species: Several; Tertiary of Spitzbergen and Greenland (*Heer.*); Japan (*Nathorst*); Bilin (*Ettinghausen*); Cretaceous, Kansas (*Newberry*); Europe (*Unger*); Tuscany (*Gaud.*); Quaternary travertines, Kutschlin (*Ettinghausen* and *Engler*).

Pirus sambucifolia CHAM. and SCHLECHT. Linn. II, 36 (1827).

Sorbus aucuparia var. *B.* MICHX. Fl. Bor.-Am. I, 290 (1803).
S. aucuparia SCHRANK, Pl. Labr. 25 (1830?) *in part.*

Pyrus americana NEWBERRY, Pac. R. R. Rep. VI, 73 (1857).
P. aucuparia MEYER, Pl. Labr. 81 (1830) *in part.*
Sorbus sambucifolia ROEM. Syn. Monog. III, 139 (1847).
S. sitchensis ROEM. Syn. Monog. III, 139 (1847).

Wats. and Coult., Gray's Man. 6 ed. 164; Mac., Fl. Can. I, 146; Upham, Fl. Minn. 53; Brew. and Wats., Fl. Calif. I, 189; Coult., Fl. Colo. 89; Trautv., Fl. Sib. 54?; Led., Fl. Ross. II, 99; Wats., King Exp. 92; Wats., Bibl. Ind. I, 292; Nym., Fl. Eur.; Miyabe, Fl. Kur. 222; Rothr., Alask. 446; Sarg., N. Am. Silva IV, 81.

Europe?, N. and W. Asia; Manchuria and Siberia to Saghalin, Kurile Isls. and Japan.

North America: Greenland and maritime provinces to Man., Brit. Col., N. W. T. and Alaska; S. to N. Eng.; W. to L. Superior region and Minn.; S. in mts. to Mexico? and Yosemite valley.

Minn. valley; Reported from vicinity of Ft. Snelling; doubtful; N. E. district; edges of woods.

HERB.: *Bailey 18,* Vermilion lake.

Pirus arbutifolia (LINN.) LINN. f. Suppl. 256 (1781).

Mespilus arbutifolia LINN. Spec. 478 (1753) *p. p.*
Crataegus pyrifolia LAM. Enc. Meth. I, 83 (1783).
Aronia pyrifolia PERS. Syn. II, 39 (1807).
Crataegus serrulata POIR. Suppl. I, 292 (1810).
Aronia arbutifolia ELL. Sk. I, 556 (1821).
Pirus floribunda LINDL. Bot. Reg. 1006 (1830).
Aronia depressa SPACH, Suit. Buff. II, 88 (1834).
Sorbus arbutifolia WENZIG, Linn. XXXVIII, 65 (1864).

Wats. and Coult., Gray's Man. 6 ed. 164; Britt., Fl. N. J. 99; Mac., Fl. Can. I, 144; Chap., Fl. S. Sts. 128; Upham, Fl. Minn. 52; Cov., Fl. Ark. 180; Engl. Focke, Nat. Pflanz. 3, III, 25; Wats., Bibl. Ind. I, 291.

North America: Newf., N. S., Q., Ont. to N. Y., N. J. and Fla.; W. to Minn., Mo., Neb., Ark. and La.

Minn. valley: Reported from E. edge of valley and from vicinity of Ft. Snelling; thickets and edges of woods.

HERB.: *Sandberg 189,* Chisago lake.

Pirus coronaria LINN. Spec. 480 (1753).

Malus coronaria MILL. Dict. (1768).
Crataegus coronaria SALISB. Prodr. 357 (1796).
Pyrus coronaria var. *iowensis* WOOD, Cl.-Book. Rev. ed. 333 (1870).
Malus microcarpa coronaria CARRIERE, Pom. Microcarp. 133 f. 17 (1884).
Pyrus iowensis BAILEY. Am. Gard. XII, 473 (1889).
Sorbus coronaria MACM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 164; Chap., Fl. S. St. 128; Upham, Fl. Minn. 53; Webb., Fl. Neb. 127; Mac., Fl. Can. I, 145; Britt., Fl. N. J. 98; Coult. Fl. Tex. 106; Cov., Fl. Ark. 180; Engl. Focke, Nat. Pflanz. 3, III, 24; Wats., Bibl. Ind. I, 292; Sarg., N. Am. Silva IV, 71.

North America: Ontario to Lake Huron; N. Y. and Penn. to N. Car. and C. Alab.; W. to Minn., Neb., Kan., Ark., Ind. Terr., La. and W. Tex.

Minn. valley: S. central district and perhaps throughout the forest region; Leaf hills? woods and streams.

HERB.: *Sheldon 322*, Smith's Mills, Blue Earth Co.; *Ballard 345*, Helena, Scott Co.; *Sheldon 659*, Waseca; *Sandberg 188*, Red Wing; *Herb. Wickersheim 48*, Mankato.

AMELANCHIER MEDIC. Phil. Bot. I, 135, 155 (1789).

Aronia PERS. Syn. II, 39 (1807) *in part.*

Baillon, *Hist. Pl.* I, 477; Benth. and HOOK., *Gen. Pl.* I, 628; Durand, *Ind. Gen. Phan.* 115; Schenck, *Palaeophyt.* 671; Engler and Prantl, *Nat. Pflanz.* 3, III, 26 (Focke); Sargent, *N. Am. Silva* IV, 125.

Living species: 6, closely related; N. temperate regions. Russia, 1; Europe, 1; North America, 3; E. Sts., 2; Canada, 3; S. Sts., 1–2; Rocky mts., 1; Calif., 3; Pl. King., 1; Pl. Wheel., 1; also, Mexico 1 other? Japan, 1; Orient, 1.

Fossil species: Tertiary, Florissant, Colo. (*Lesquereaux, Newberry*); Europe, (*Ettinghausen*), 4–5.

Amelanchier alnifolia NUTT. Journ. Acad. Phil. VII, 22 (1835).

Pirus sanguinea PURSH, Fl. Am. 340 (1814).
Aronia alnifolia NUTT. Gen. I, 306 (1818).
Pirus alnifolia SPRENG. Syst. II, 509 (1825).
Amelanchier ovalis var. *semiintegrifolia* HOOK. Fl. Bor.-Amer. I, 202 (1833).
A. florida LINDL. Bot. Reg. 1589 (1835).
A. canadensis var. *alnifolia* T. and G. Fl. I, 473 (1838).
A. canadensis var. *pumila* T. and G. Fl. I, 474 (1838).
A. pumila ROEM. Syn. Monog. III, 145 (1847).
A. canadensis var. *oblongifolia* BENTH. Pl. Hartw. 309 (1846).
A. diversifolia var. *alnifolia* TORR. Frém. Rep. 89 (1858).
A. canadensis ANDERSON, Cat. Pl. Nev. 120 (——).

Wats. and Coult., Gray's Man. 6 ed. 167; Mac., Fl. Can. I, 148, 522; Webb., Fl. Neb. 127; Upham, Fl. Minn. 53; Coult., Fl. Colo. 89; Brew. and Wats., Fl. Calif. I, 190; Greene, Fl. Fran. 52; Roth., Wheel, Exp. 116; Wats., King Exp. 92; Sarg., N. Am. Silva IV, 131.

North America: N. Mich., Minn., Neb. to Brit. Col., Vancouver, Charlotte Isls. and Peace river reg.; S. to Calif.; S. in mts. to Colo. and Arizona; N. to Alaska and N. lat. 62° 45′.

Minn. valley: N. E. district; thickets and banks of streams.

Amelanchier canadensis (LINN.) MEDIC. Gesch. Bot. 79 (1783).

Mespilus canadensis LINN. Spec. 478 (1753).

Pyrus botryapium LINN. f. Suppl. 255 (1781).
Crataegus racemosa LAM. Enc. Meth. I, 84 (1783).
Mespilus nivea MARSH. Arbust. Amer. 90 (1785).
Amelanchier canadensis var. *prunifolia* CASTIGL. Viag. St. Uni. II, 293 (1800).
Mespilus amelanchier CASTIGL. Viag. St. Uni. II, 293 (1800).
M. canadensis var. *cordata* MICHX. Fl. N. Am. I, 291 (1803).
Amelanchier botryapium BORKH. Handb. Forstb. II, 1260 (1800).
Aronia botryapium PERS. Syn. II, 39 (1807).
Mespilus arborea MICHX. f. Arb. Am. III, 68 (1813).
Aronia arborea BART. Comp. Fl. Phil. I, 228 (1818).
Amelanchier sanguinea LINDL. Bot. Reg. t. 1171 (——).
Aronia cordata RAF. Med. Fl. II, 106 (1830).
Amelanchier ovalis HOOK. Fl. Bor.-Am. I, 202 (1833).
A. canadensis var. *botryapium* T. and G. Fl. I, 473 (1838).
Pyrus bartramiana TAUSCH, Flora II, 715 (1838).
P. wangenheimiana TAUSCH, Flora II, 715 (1838).
Amelanchier bartramiana and *wangenheimiana* ROEM. Syn. Monog. III, 145, 146 (1847).

Wats., and Coult., Gray's Man. 6 ed. 166; Mac., Fl. Can. 148; Chap., Fl. S. St. 129; Webb., Fl. Neb. 127; Britt., Fl. N. J. 100; Upham, Fl. Minn. 53; Wats., King Exp. 92: Cov., Fl. Ark. 180; Engl. Focke, Nat. Pflanz. 3, III, 26; Wats., Bibl. Ind. I, 272; Sarg., N. Am. Silva IV, 127.

North America: Newf., N. S., N. Br., Q., Ont., L. Huron reg. and L. Superior reg.; S. to N. J. and Fla.; W. to Minn., Dak., Neb., Kan., Ark. and La.

Minn. valley: Throughout; banks of streams and shores of lakes.

HERB.: *Sheldon 1358*, Lake Benton; *Sheldon 905*, Sleepy Eye; *Sheldon 625*, Wilton, Waseca Co.; *Sheldon 945*, Redwood Falls; *Taylor 409*, Janesville; *Holzinger 73*, Winona Co.; *Sandberg 190*, Red Wing; *Herrick 102*, Minneapolis; *Kassube 84*, Minneapolis; *Bailey 2*, Vermilion lake; *Herb. Sheld 1856*, Ramsey Co.

Amelanchier canadensis (LINN.) MEDIC. var. **obovalis** (MICHX.) B. S. P. Cat. N. Y. (1888).

Mespilus canadensis var. *obovalis* MICHX. Fl. N. Am. I, 291 (1803).
Pyrus sanguinea PURSH, Fl. Am. I, 340 (1814) *in part.*
P. ovalis BIGEL. Fl. Bost. ed. 2, 195 (1824).
Aronia ovalis TORR. Fl. U. S. 479 (1824).
Amelanchier ovalis DC. Prodr. II, 632 (1825).
A. intermedia SPACH, Hist. Veg. II, 85 (1834).
A. canadensis var. *oblongifolia* T. and G. Fl. I, 473 (1838).
A. oblongifolia ROEM. Syn. Monog. 147 (1847).
A. spicata DECN. Mem. Fam. Pom. 135 (1875).

Wats. and Coult., Gray's Man. 6 ed. 167; Britt., Fl. N. J. 100; Mac., Fl. Can. 149; Upham, Fl. Minn. 53; Cov., Fl. Ark. 180; Wats., Bibl. Ind. I, 273; Sarg., N. Am. Silva IV, 128.

North America: N. S., N. Br., Q., Ont., Man., Saskatckewan, Brit. Col. to Rocky mts. and N. on Mackenzie river; S. to N. J., Va.; W. to Minn., Mo. and Ark.

Minn. valley: Throughout; banks of streams and shores of lakes.

HERB.: *Taylor 602½*, Minnesota lake; *Ballard 359*, Helena, Scott Co.; *Sandberg 191*, Cannon Falls; *Sandberg 192*, Cannon Falls; *Kassube 85*, Minneapolis; *Roberts 36*, Devil's Track river; *Herrick 103*, Minneapolis; *Bailey 407*, Burntside lake; *Herb. Sheld. 1857*, Ft. Snelling; *Herb. Moyer 80*, Montevideo; *Wickersheim 136*, Ash lake, Lincoln Co.; *Herb. Moyer 249*, Montevideo.

CRATAEGUS LINN. Gen. 404 (1737).
Mespilus LINN. Gen. 407 (1737).
Oxyacantha RUPP. Fl. Jen. ed. 3, 136 (1745).
Mespilophora NECK. Elem. 724 (1790).
Halmia, Anthomeles, Phaenopyrum ROEM. Syn. Monog. III, 101–103 (1847).
Phalacros WENZIG, Linn. XXXVIII, 164 (1864).
Timbalia CLOS, ex Dur. Ind. Gen. Phan. 115 (1888).
Sportella HANCE, ex Dur. l. c. (1888).

Baillon, *Hist. Pl.* I, 475; Benth. and Hook., *Gen. Pl.* I, 626; Durand, *Ind. Gen. Phan.* 115; Engler and Prantl, *Nat. Pflanz.* 3, III, 26; Schenck, *Palaeophyt.* 671; Sargent, *N. Am. Silva* IV, 83.

Living species: 75± described; 30–40 distinct; N. temperate regions to Japan, Himalayas, Mexico and Ecuador. Russia, 14; Europe, 14; Russian Europe, 9; N. America, 14–16; Canada, 8–9; S. Sts., 11–12; E. Sts., 10–11; Rocky mts., 4–5; Pl. King, 2; W. Tex., 4; mid. Calif., 2; Mexico, 3; Orient, 6; China and Japan, 3; Himalayas. 2.

Fossil species: Upper Cretaceous, Greenland (*Heer*), 2 sp.; Tertiary, Greenland (*Heer*), 4 sp.

Crataegus crus-galli LINN. Spec. 476 (1753).
C. lucida MILL. Dict. (1768).
Mespilus crus-galli MARSH. Arb. Am. 88 (1785).
M. lucida EHRH. Beitr. IV, 17 (1788).
Crataegus laurifolia MEDIC. Gesch. Bot. 84 (1793).
Mespilus cuneifolia MOENCH, Meth. 684 (1794).
Crataegus crus-galli var. *splendens* AIT. Hort. Kew. ed. 2, III, 202 (1811).
Mespilus watsoniana SPACH, Hist. Veg. II, 57 (1834).
Crataegus watsoniana ROEM. Syn. Monog. III, 117 (1847).
C. carrierei CARR. Rev. Hort. 108 (1883).
C. lavallei HORT. PAR.

Wats. and Coult., Gray's Man. 6 ed. 166; Britt., Fl. N. J. 100; Chap., Fl. S. St. 127; Upham, Fl. Minn. 53; Mac., Fl. Can. I, 147; Coult., Fl. Tex.

107; Cov., Fl. Ark. 180; Engl. Focke, Nat. Pflanz. 3, III, 26; Wats., Bibl. Ind. I, 277; Sarg., N. Am. Silva IV, 91.

North America: S. Ont. to N. Y., N. J. and Fla.; W. to Minn.?, Mo., Ark. and Colo. river, Tex.

Minn. valley: Reported from E. and S. E. districts; rare or doubtful; thickets and banks of streams.

HERB.: *Sandberg 187*, Red Wing.

Crataegus coccinea LINN. Spec. 476 (1753).

Mespilus coccinea MARSH. Arb. Am. 87 (1785).
Crataegus rotundifolia MOENCH, Bäum. Weiss. 29, t. 1 (1785).
Mespilus rotundifolia EHRH. Beitr. III, 20 (1788).
M. coccinea var. *viridis* CASTIGL. Viag. St. Uni. II, 293 (1790).
? *M. maxima* DU MONT DE COURS. Bot. Cult. ed. 2, V, 451 (1811).
? *Crataegus viridis* ELL. Sk. I, 551 (1821).
Mespilus odorata WENDL. Regensb. Flora 700 (1823).
? *M. wendlandii* OPIZ. Reg. Fl. 590 (1834).
M. flabellata SPACH, Suit. Buff. II, 63 (1834).
Crataegus coccinea var. *oligandra* TORR. and GRAY, Fl. I, 465 (1838).
C. coccinea var. *viridis* T. and G. Fl. I 465 (1838).
Halmia flabellata ROEM. Syn. Monog. III, 136 (1847).
Phaenopyrum coccineum and *wendlandii* ROEM. l. c. 156 (1847).
Anthomeles rotundifolia ROEM. l. c. 140 (1847).
Crataegus glandulosa var. *rotundifolia* REGEL, Act. Hort. Petrop. I, 120 (1871).

Wats. and Coult., Gray's Man. 6 ed. 165; Britt., Fl. N. J. 99; Coult., Fl. Colo. 89, in part; Chap., Fl. S. St. 127; Upham, Fl. Minn. 52; Mac., Fl. Can. I, 147, 522; II, 320; Cov., Fl. Ark. 180; Engl. Focke, Nat. Pflanz. 3, III, 26; Wats., Bibl. Ind. I, 276; Sarg., N. Am. Silva IV, 95.

North America: Newf., N. S., N. Br., Q., Ont. to Man. and Rocky mts.; S. to Mass., N. J., Fla. and Miss.; W. to Minn., Ark. and S. W. Colo.

Minn. valley: Higher levels; N. edge and far W.; rocky banks and hillsides.

HERB.: *Sheldon 1497*, Lake Benton; *Bailey 449*, Mud Lake; *Kassube 82*, Minneapolis.

Crataegus mollis SCHEELE, Linn. XXI. 569 (1847).

Mespilus coccinea SCHMIDT, Oestr. Baumz. IV, 30 (1822).
M. pubescens WENDLAND, Flora 700 (1823).
M. coccinea var. *pubescens* TAUSCH, Flora II, 718 (1838).
Crataegus coccinea var. *mollis* T. and G. Fl. I 465 (1838).
C. tomentosa EMERS. Trees Mass. 435 (1846).
Phaenopyrum subvillosum ROEM. Syn. Monog. III, 154 (1847).
Crataegus subvillosa TORR. Pac. R. R. Rep. IV, 86 (1856).
C. texana BUCKL. Proc. Ac. Phil. 454 (1861).
C. tomentosa var. *mollis* GRAY, Man. ed. 5, 160 (1868).
Mespilus tilaefolia KOCH, Dendr. I, 151 (1872).

Wats. and Coult., Gray's Man. 6 ed. 165; Upham, Fl. Minn. 53; Mac., Fl. Can. I, 147; Coult., Fl. Tex. 107; Wats., Bibl. Ind. I, 207; Sarg., N. Am. Silva IV, 99.

North America: Q., Ont. and L. Superior region; S. to Mass.; W. to Mich., Minn., Mo., Tex. and Mexico.

Minn. valley: S. central district; habitat that of *C. coccinea.*

HERB.: *Taylor 703*, Minnesota lake; *Sheldon 1231*, Iberia, Brown Co.; *Sheldon 358*, Smith's Mills, Blue Earth Co.; *Taylor 426*, Janesville; *Taylor 432*, Lake Elysian, Waseca Co; *Sheldon 613*, Wilton, Waseca Co.; *Herb. Wickersheim 45*, Mankato.

Crataegus tomentosa LINN. Spec. 476 (1753) *excl. syn. Gronov.*

C. leucophaeos MOENCH, Hort. Weiss. 31 (1785).
Mespilus calpodendron EHRH. Beitr. II, 67 (1788).
Crataegus pyrifolia AIT. Hort. Kew. II, 168 (1789).
Mespilus tomentosa CASTIGL. Viag. St. Uni. II, 293 (1790).
M. latifolia POIR. Enc. Meth. IV, 444 (1797).
Crataegus latifolia PERS. Syn. II, 37 (1807).
Mespilus pyrifolia WILLD. Enum. 523 (1809).
M. lobata POIR. Suppl. IV, 71 (1816).
Crataegus lobata BOSC. DC. Prodr. II, 628 (1825).
Halmia tomentosa and vars. *pyrifolia*, *leucophlaea* and *calpodendron* ROEM. Syn. Monog. III, 135-136 (1847).
H. lobata ROEM. Syn. Monog. III, 136 (1847).
Crataegus tomentosa var. *pyrifolia* GRAY. Man. ed. 5, 160 (1868).

Wats. and Coult., Gray's Man. 6 ed. 166; Britt., Fl. N. J. 99; Chap., Fl. S. St. 127; Webb., Fl. Neb. 127; Upham, Fl. Minn. 52; Mac., Fl. Can. I, 147, 522; Wats., Bibl. Ind. I, 280; Sarg., N. Am. Silva IV, 101.

North America: Ont. and W. N. Y. to Man.; W. to Mich., Minn., Neb., Mo. and Tex.

Minn. valley: Throughout; common; thickets and wooded banks of streams.

HERB.: *Sheldon 517*, Waseca; *Sheldon 1005*, Sleepy Eye; *Kassube 83*, Minneapolis; *Holzinger 72*, Rush creek, Winona Co., *Bailey 57*, Vermilion lake; *Sandberg 186*, Red Wing; *Herb. Sheld. 1765*, Minneapolis; *Herb. Moyer 79*, Montevideo; *Herb. Wickersheim 46*, Idlewild; *47*, Ash lake, Lincoln Co.

RUBUS LINN. Gen. 413 (1737).

Dalibarda LINN. Spec. 491 (1753).
Cylactis RAF. Sill. Journ. 377 (1819).

Baillon, *Hist. Pl.* I, 466; Benth. and Hook., *Gen. Pl.* I, 616; Durand, *Ind. Gen. Phan.* 113; Engler and Prantl, *Nat. Pflanz.* 3, III, 28; Schenck, *Palaeophyt.* 666.

Living species: 1500 described, 180-205 distinct. 100 (B. and H.). Cosmopolitan, especially in forests of N. hemisphere. Russia, 20; Europe, 56; Russian Europe, 10; North America, 24–25; Canada, 18-20; E. Sts., 11; S. Sts., 6; Rocky mts., 6; Pl. King, 3; Pl. Wheel., 4; Mid. Calif., 5.

Fossil species: Forest bed of Cromer, "Tuffen" Denmark. (*R. fruticosus* Linn. and *R. chamaemorus* Linn.).

Rubus repens (LINN.) OK. Rev. Gen. I, 223 (1891).

Dalibarda repens LINN. Spec. 491 (1753).
Rubus dalibarda LINN. Spec. 2 ed. 708 (1762).
Dalibarda violaeoides MICHX. Fl. N. Am. I, 299 (1803).

Wats. and Coult., Gray's Man. 6 ed. 156; Upham, Fl. Minn. 57; Mac., Fl. Can. I, 129, 514; Engl. Focke, Nat. Pflanz. 3, III, 28; Wats., Bibl. Ind. I, 315.

North America: N. S., N. Br., Q., Ont. to L. Huron reg.; S. to Minn., Wisc. and Mich.—N. peninsular.

Minn valley: Reported from the N. edge; wooded hillsides and dark, shaded brooks; rare.

Rubus hispidus LINN. Spec. 493 (1753).

R. obovalis MICHX. Fl. N. Am. I, 298 (1803).
R. obovatus ELL. Sk. I, 570 (1824).

Wats. and Coult., Gray's Man. 6 ed. 155; Britt., Fl. N. J. 94; Upham, Fl. Minn. 52; Chap., Fl. S. St. 125; Mac., Fl. Can. I, 131; Cov., Fl. Ark. 179; Wats., Bibl. Ind. I, 315.

North America: N. S., N. Br., Q., Ont. to N. Eng., N. J., Ga.; W. to Minn., E. Kan. and Ark.

Minn. valley: N. E. district and N. edge; rare; woods and thickets; edges of streams.

HERB.: *Bailey 182*, Vermilion lake; *Sandberg 183*, Chisago Co.

Rubus canadensis LINN. Spec. 494 (1753).

R. arcticus WALT. Fl. Car. 149 (1788).
R. flagellaris WILLD. Enum. 594 (1809).
R. procumbens MUHL. Cat. 52 (1813),
R. trivialis PURSH, Fl. Am. 347 (1814).

Wats. and Coult., Gray's Man. 6 ed. 155; Britt., Fl. N. J. 94; Upham, Fl. Minn. 52; Mac., Fl. Can. I, 131; Cov., Fl. Ark. 179; Wats., Bibl. Ind. I, 314.

North America: Newf., N. S., N. Br., Q., Ont. to Man.; S. to N. Eng. and N. J.; W. to Minn., Kan. and Ark.

Minn. valley: Forest district to Blue Earth Co.; probably to Cottonwood valley; hillsides and barren places.

HERB.: *Taylor 18*, Elysian; *Taylor 201*, Janesville; *Sheldon 451*, Madison Lake; *Ballard 234*, Jordan, Scott Co.; *Kassube 80*, Minneapolis: *Holzinger 70*, Winona Co.; *Sandberg 182*, Vasa; *Herb. Wickersheim 43*, Mankato.

Rubus villosus AIT. Hort. Kew. II, 210 (1789).

R. fruticosus MARSH. Arbust. 137 (1785).

R. argutus LINK, Enum. II, 60 (1822).

Wats. and Coult., Gray's Man. 6 ed. 155; Britt., Fl. N. J. 94, Webb., Fl. Neb. 128; Chap., Fl. S. St. 125; Upham, Fl. Minn. 52; Mac., Fl. Can. I, 131, 514; Cov., Fl. Ark. 179; Engl. Focke, Nat. Pflanz. III, 3, 31; Wats., Bibl. Ind. I, 316.

North America: Newf. and N. S. to Man.; N. U. S. to Ga. and Ark.

Minn. valley: Throughout; local or rare; edges of thickets and openings in forest.

HERB.: *Sheldon 147*, Madison Lake; *Ballard 446*, Prior's lake, Scott Co.; *Ballard 81*, Chaska; *Sandberg 180*, Goodhue Co.; *Holzinger 68*, Dakota Co.; *Kassube 79*, Minneapolis; *Oestlund 53*, Ramsey Co.; ? *Holzinger 69*, Rush creek valley; *Sandberg 181*, Cannon Falls; *Herb. Sheld. 1784*, Minneapolis; *Herb. Wickersheim 42*, Idlewild, Lincoln Co.

Rubus occidentalis LINN. Spec. 493 (1753).

R. idaeus var. *americanus* TORR. Ann. Lyc. N. Y. II, 106 (1835).

Wats. and Coult., Gray's Man. 6 ed. 155; Webb., Fl. Neb. 128; Upham, Fl. Minn. 51; Coult., Fl. Colo. 80; Chap., Fl. S. St. 125; Britt., Fl. N. J. 94; Mac., Fl. Can. I, 130; Engl. Focke, Nat. Pflanz. III, 3, 30; Wats., Bibl. Ind. I, 316.

North America: N. Br., Q., Ont. to N. Eng.; N. J. and Ga.; W. to Minn., Neb., Colo. and Oregon; N. in Brit. Col.

Minn. valley: Forest and prairie districts. W. to Pommedes Terres valley; waste grounds and barren woodland.

HERB.: *Ballard 469*, Prior's lake, Scott Co.; *Kassube 78*, Minneapolis; *Oestlund 52*, Hennepin Co.; *Sandberg 179*, Cannon Falls; *Herb. Moyer 77*, Montevideo.

Rubus strigosus MICHX. Fl. N. Am. I, 297 (1803).

R. idaeus PURSH, Fl. Am. 346 (1814).

R. idaeus var. *strigosus* MAXIM. Bull. Acad. Petersb. XVII, 161 (1875).

Wats. and Coult., Gray's Man. 6 ed. 155; Webb., Fl. Neb. 128; Britt., Fl. N. J. 93; Upham, Fl. Minn. 51; Coult., Fl. Colo. 79; Mac., Fl. Can. I, 130, 514; Trautv., Fl. Sib. 53?; Hook., Fl. Gt. Brit. 117; Miyabe, Fl. Kur. 228; Wats., King Exp. 82, 420; Roth., Wheel. Exp. 111; Engl. Focke, Nat. Pflanz. III, 3, 30; Wats., Bibl. Ind. I, 318

N. and W. Europe?, Siberia to Japan, Saghalin and Kurile Isles; N. Africa?.

North America: Labrador to Man. and Coast range; S. to N. J. and N. Car.; W. to Minn., Neb., Mo., Colo. and N. Mex.

Minn. valley: Throughout; particularly in the forest region; wooded hillsides and banks of streams.

HERB.: *Ballard 207,* Jordan, Scott Co.: *Sheldon 854,* Sleepy Eye; *Sheldon 43,* Elysian; *Taylor 133,* Janesville; *Bailey 170,* Vermilion lake; *Holzinger 67,* Winona Co.; *Herrick 101,* Minneapolis; *Kassube 77,* Minneapolis; *Sandberg 178,* Cannon Falls; *Herb. Sheld. 1852,* Minneapolis; *Herb. Wickersheim 40,* Lake Park, Becker Co.; *41,* Idlewild, Lincoln Co.

Rubus triflorus RICH. Frankl. Journ. 2 ed. 19 (1825).

R. saxatilis var. *canadensis* MICHX. Fl. N. Am. I, 298 (1803).
R. saxatilis var. *americanus* PERS. Syn. II, 52 (1807).
Cylactis montana RAF. Ann. Journ. Sci. 1, I, 377 (1820).
Rubus saxatilis BIGEL. Fl. Bost. 2 ed. 201 (1824).
R. canadensis TORR. Fl. U. S. 488 (1824).
R. aegopodioides SERINGE, DC. Prodr. II, 565 (1825).
R. mucronatus SERINGE, DC. Prodr. II, 565 (1825).

Wats. and Coult., Gray's Man. 6 ed. 154; Britt., Fl. N. J. 93; Upham, Fl. Minn. 51; Mac.,Fl. Can. I, 129; Engl. Focke, Nat. Pflanz. III, 3, 29; Wats., Bibl. Ind. I, 318.

North America: Labrador to Hudson Bay and Pac. in Can.; S. to N. J.; W. to Minn., Iowa, Dak. and Mont.

Minn. valley: Forest district, Ft. Snelling to Blue Earth Co. and New Ulm; wooded banks and hillsides.

HERB.: *Kassube 76,* Minneapolis; *Holzinger 66,* Winona Co.; *Sandberg 177,* Goodhue Co.

FRAGARIA LINN. Gen. 414 (1737).

Duchesnia SMITH, Trans. Linn. Soc. X, 372 (1819).

Baillon, *Hist Pl.* I, 465; Benth. and Hook., *Gen. Pl.* I, 633; Durand, *Ind. Gen. Phan.* 113; Engler and Prantl, *Nat. Pflanz.* 3, III, 33; Schenck, *Palaeophyt.* 666.

Living species: 10; north temperate regions to S. India and Mexico; 1 sp. in Chile. 6 sp. (Durand); 3–4 (B. and H.). Russia, 4; Europe, 4; Russian Europe, 4; North America, 4; Mid. Calif., 4; E. Sts., 2; Canada, 3; S. Sts., 1; Rocky mts., 2; Pl. King, 1; Pl. Wheel., 1.

Fossil species: 3–4; Miocene, Hungary (*Stur*); Spitzbergen and Cape Lyall (*Heer*).

Fragaria vesca LINN. Spec. 494 (1753).

Wats. and Coult., Gray's Man. 6 ed. 158; Britt., Fl. N. J 95; Webb., Fl. Neb. 128; Upham, Fl. Minn. 51; Coult., Fl. Colo. 83; Brew. and Wats., Fl. Calif. I, 177; Hook., Fl. Gt. Brit. 123; Mac., Fl. Can. I, 135: Led., Fl. Ross. II, 63; Nym., Fl. Eur.; Herd ,Fl. Eur. Russ. 48; Greene, Fl. Fran. 70; Wats., King Exp. 85; Engl. Focke, Nat. Pflanz. III, 3, 33; Wats., Bibl. Ind. I, 282; Hart., Fl. Scand. I, 285.

Arctic Europe; N. and W. Asia to Himalayas,

North America: Canada throughout to lat. 56° N. on

Peace river and middle elevations in Sierras; throughout N. U. S. to Arizona and Virginia.

Minn. valley: Throughout; forest region and wooded banks of streams; less abundant than *F. virginiana* var. *illinoensis* (Prince).

HERB.: *Sheldon 853*, Sleepy Eye; *Ballard 137*, Chaska; *Kassube 75*, Minneapolis; *Oestlund 51*, Hennepin Co.; *Bailey 45*, Vermilion lake; *Hammond 53*, Lake City; *Herb. Sheld. 1858*, Hennepin Co.

Fragaria virginiana MILL. var. **illinoensis** (PRINCE) GRAY, Man. V, 158 (1867).

F. elatior EAT. Man. 249 (1818) *not Ehrh.*
F. illinoensis and *iowensis* PRINCE, Treat. Gard. Flush. (1820).
F. grayana VILM. ex Gay, Ann. Sci. Nat. Ser. 4, VIII, 202 (1857).

Wats. and Coult., Gray's Man. 6 ed. 158; Britt., Fl. N. J. 95; Webb., Fl. Neb. 128; Coult., Fl. Colo. 83; Upham, Fl. Minn. 51; Brew. and Wats., Fl. Calif. I, 177; Mac., Fl. Can. I, 135; II, 319; Engl. Focke, Nat. Pflanz. III, 3, 33 (spec.); Wats., Bibl. Ind. I, 283.

North America: Ont. to Brit. Col., Coast range and 64° N. lat. in mts.; W. N. Y. to Minn., Mont., Washington and S. E. of Rockies to Colo., Neb., Kan. and Arizona?.

Minn. valley: Throughout; common in rich soil and on shaded banks of streams.

HERB.: *Ballard 175*, Shakopee; *Taylor 165*, Janesville; *Sheldon 37*, Elysian; *Ballard 144*, Chaska; *Bailey 36*, Vermilion lake; *Kassube 74*, Minneapolis; *Sandberg 175*, Red Wing; *Oestlund 50*, Hennepin Co.; *Sandberg 176*, Tower; *Herb. Moyer 76*, Montevideo; *Herb. Wickersheim 39*, Ash lake, Lincoln Co.; *Herb. Sheld. 1859*, Minneapolis.

POTENTILLA LINN. Gen. 415 (1737).

Comarum LINN. Gen. 417 (1737).
Tormentilla LINN. Gen. 416 (1737).
Sibbaldia LINN. Syst. VI, 310 (1748).
Trichothalamus LEHM. Act. Caes. X, 585 (1834?).
Lehmannia TRATT. Ros. Monog. IV, 144 (1824).
Bootia BIGEL. Fl. Bost. ed. II, 351 (1824).
Dryadanthe ENDL. Gen. 1242 (1840).
Dactylophyllum SPENN. Fl. Frib. III, 1034 (1829).
Horkelia CHAM. and SCHL. Linn. II. 26 (1828).
Ivesia TORR. Bot. U. S. Expl. Exp. II, 4 (1855).
Quinquefolium and **Pentaphylloides** TOURN. Inst. 296 (1700).
Fragariastrum SCHUR. Enum. Transsylv. 137 (1866).
Chamaerhodos BUNGE, Led. Fl. Alt. I, 429 (1829).
Potaninia MAX. Mel. Biol. XI, 214 (1881).

Baillon, *Hist. Pl.* I, 466; Benth. and Hook., *Gen. Pl.* I, 620; Durand, *Ind. Gen. Phan.* 113; Engler and Prantl, *Nat. Pflanz.* 3, III, 34, 35, 36 (Focke); Schenck, *Palaeophyt.* 666.

Living species: 300± described; 165 distinct. Boreal and temperate regions of N. hemisphere, tropical mts. and 2 sp. in S. hemisphere. Russia, 70; Europe, 67; Russian Europe, 43; North America, 52–56; California, 35; E. Sts., 14–15; Canada, 30–33; Rocky mts., 16–20; Pl. King, 15; Pl. Wheel., 14; S. Sts., 3.

Fossil species: Arctic regions, Tertiary (*Heer*) *Dryas?*.

Potentilla canadensis LINN. Spec. 498 (1753).

P. pumila POIR. Enc. Meth. V, 594 (1804).
P. sarmentosa WILLD. Enum. 554 (1809).

Wats. and Coult., Gray's Man. 6 ed. 160; Britt., Fl. N. J. 96; Upham, Fl. Minn. 49; Chap., Fl. S. St. 124; Mac., Fl. Can. I, 141, 518; Cov., Fl. Ark. 179; Wats., Bibl. Ind. I, 294.

North America: N. S., Q., Ont. to L. Huron; S. to N. Eng., N. J., N. Car. and Miss.; W. to Minn., Neb., Kan. and Ark.

Minn. valley: Throughout; in dry or sandy soil; especially in forest openings.

HERB.: *Ballard 252,* Jordan, Scott Co.; *Taylor 930,* Glenwood; *Taylor 570,* Minnesota lake; *Taylor 797,* Glenwood; *Ballard 416,* New Prague, Scott Co.; *Oestlund 42,* Hennepin Co.; *Kassube 70,* Minneapolis; *Oestlund 43,* Hennepin Co.; *Herrick 94,* Minneapolis; *Herrick 95,* Minneapolis; *Sandberg 169,* Cannon Falls.

Potentilla canadensis LINN. var. **simplex** (MICHX.) T. and G. Fl. I, 443 (1838).

P. simplex MICHX. Fl. N. Am. I, 303 (1803).
P. caroliniana POIR. Enc. Meth. V, 595 (1804).

Wats. and Coult., Gray's Man. 6 ed. 160; Britt., Fl. N. J. 96; Webb., Fl. Neb. 128; Upham, Fl. Minn. 49; Chap., Fl. S. St. 124; Mac., Fl. Can. I, 141, 518; Wats., Bibl. Ind. I, 294.

North America: With type; more common eastward.

Minn. valley: Forest district; N. E. and reported to New Ulm; meadows and damp places along streams.

HERB.: *Sandberg 170,* Chisago Co.; *Manning 3,* Lake City.

Potentilla anserina LINN. Spec. 495 (1753).

Wats. and Coult., Gray's Man. 6 ed. 160; Britt., Fl. N. J. 96; Upham, Fl. Minn. 50; Coult., Fl. Colo. 86; Trautv., Fl. Sib. 50; Hook., Fl. Gt. Brit. 125; Brew. and Wats., Fl. Calif. I, 180; Mac., Fl. Can. I, 141; Forbes and Hems., Fl. Sin. 240; Led., Fl. Ross, II, 44; Nym., Fl. Eur.; Miyabe, Fl. Kur. 232; Herd., Fl. Eur. Russ. 48; Greene, Fl. Fran. 63; Wats., King

Exp. 89; Roth., Wheel. Exp. 114; Engl. Focke, Nat. Pflanz. III, 3, 34; Wats., Bibl. Ind. I, 293; Hart, Fl. Scan. I, 287; Webb., Appx. Neb. 34; Rothr., Alask. 445.

Arctic Europe; N. Asia to Himalayas and China; Australasia and S. America.

North America: Greenland; E. Canada to Arctic ocean; S. to N. Eng., N. J.; W. to Minn., Neb.; California to N. Mexico.

Minn. valley: N. E. districts; N. edge and high levels, W. and S. W.; river banks and hillsides.

HERB.: *Sheldon 1492*, Pipestone City; *Sheldon 1556*, Lake Benton; *Sheldon 1360*, Verdi, Lincoln Co.; *Kassube 73*, Minneapolis; *Oestlund 46*, Minneapolis; *Herrick 97*, Minneapolis; *Oestlund 47*, Hennepin Co.; *Sandberg 172*, Red Wing; *Herb. Sheld. 1763*, Minneapolis; *Herb. Wickershiem*, Ash Lake, Lincoln Co.; *Herb. Moyer 75*, Montevideo.

Potentilla tridentata SOLAND. Ait. Kew. II, 216 (1789).

P. retusa MUELL. Fl. Dan. V, 799 (1782).

Wats. and Coult., Gray's Man. 6 ed. 160; Britt., Fl. N. J. 97; Upham, Fl. Minn. 51; Chap., Fl. S. St. 124; Mac., Fl. Can. I. 141; Wats., Bibl. Ind. I, 301.

North America: Labrador and Greenland; Newf., N. S., N. Br., L. Huron reg., L. Superior to Rocky mts. and 64° N. lat in N. W. T.; S. to N. Eng., N. J. and mts. of N. Car.; W. around Gt. lakes to N. Iowa, Wisc. and Minn.

Minn. valley: Far N. W. and N. edge; only in forest district; high ground and exposed places.

HERB.: *Roberts 33*, Grand Marais; *Roberts 34*, Duluth; *Bailey 425*, Fall lake; *Herrick 98*, Northern Pacific Junction; *Sandberg 173*, N. P. Junction; *Bailey 513*, Agate bay.

Potentilla fruticosa LINN. Spec. 494 (1753).

P. fruticosa var. *americana* MARSH. Arbust. Amer. 109 (1785).
P. floribunda PURSH, Fl. Am. 355 (1814).
Dasyphora floribunda RAF. Aut. Bot. 167 (1838).

Wats. and Coult., Gray's Man. 6 ed. 160; Britt., Fl. N. J. 96; Upham, Fl. Minn. 50; Coult., Fl. Colo. 86; Brew. and Wats., Fl. Calif. I, 180; Trautv., Fl. Sib. 52; Hook., Fl. Gt. Brit. 123; Mac., Fl. Can. I, 141; Forbes and Hems., Fl. Sin. 243; Led., Fl. Ross. II, 61; Nym., Fl. Eur; Miyabe, Fl. Kur. 230; Herd., Fl. Eur. Russ. 46; Greene, Fl. Fran. 63; Wats., King Exp. 89; Roth., Wheel. Exp. 114; Engl. Focke, Nat. Pflanz. III, 3, 34; Wats., Bibl. Ind. I, 296; Hart., Fl. Scand I, 287; Rothr., Alask. 445.

N. Europe to Alps and Pyrenees; N. and W. Asia to Himalayas; China and Japan; Kurile isls.

North America: Greenland, Labrador and Newf. to Man. and Arctic circle; S. to N. J.; W. to Iowa, Minn, Colo., N. Calif. and S. in mts. to C. Arizona. Alaska.

Minn. valley: Higher levels, far N. W.; wet grounds and edges of sloughs.

HERB.: *Bailey 495,* Agate bay; *Roberts 31,* Grand Marais; *Roberts 32,* Split Rock.

Potentilla palustris (LINN.) SCOP. Fl. Carn. 2 ed. I, 359 (1772).

Comarum palustre LINN. Spec. 502 (1753).

Fragaria palustris CRANTZ, Stirp. Austr. 73 (1769).

Comarum digitatum and *angustifolium* RAF. Fl. Tell. II, 55, 56 (1838).

Wats. and Coult., Gray's Man. 6 ed. 160; Upham, Fl. Minn. 51; Brew. and Wats., Fl. Calif. I, 180; Hook., Fl. Britt. 124; Trautv., Fl. Sib. 53; Britt., Fl. N. J. 97; Mac., Fl. Can I, 140; Led., Fl. Ross. II, 61; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 48; Greene, Fl. Fran. 63; Engl. Focke, Nat. Pflanz. III, 3, 34; Wats., Bibl. Ind. I, 299; Hart., Fl. Scand. I, 286; Rothr., Alask. 445.

Arctic Europe to Pyrenees; Russia to Caucasus; N. Asia.

North America: Labrador and N. S. to Hudson Bay, Puget sound and Alaska; S. to N. J., Ind., Mich., Wisc., Ill., Minn.; on Pac. coast to C. California.

Minn. valley: Throughout; bogs and edges of marshes; rather common.

HERB.: *Taylor 1200,* Lake Helena, Waseca Co.; *Sheldon 710,* Sleepy Eye; *Sheldon 123,* Madison Lake; *Ballard 443,* Prior's lake, Scott Co.; *Ballard 415,* New Prague, Scott Co.; *Sheldon 345,* Smith's Mill, Blue Earth Co.; *Sheldon 428,* Ash lake, Blue Earth Co.; *Sheldon 522,* Waseca; *Ballard 356,* Helena, Scott Co.; *Herrick 99,* Minneapolis; *Oestlund 48,* Ramsey Co.; *Herrick 100,* Minneapolis; *Oestlund 49,* Ramsey Co.; *Bailey 142,* Vermilion lake; *Sandberg 174,* Chisago Co.

Potentilla argentea LINN. Spec. 497 (1753).

Wats. and Coult., Gray's Man. 6 ed. 160; Britt., Fl. N. J. 96; Upham, Fl. Minn. 50; Hook., Fl. Brit. 125; Mac., Fl. Can. I, 139; Led., Fl. Ross. II, 47; Nym., Fl. Eur.; Mac., Fl. Can. I, 517; Herd., Fl. Eur. Russ. 48; Engl. Focke, Nat. Pflanz. III, 3, 35; Wats., Bibl. Ind. I, 293; Hart, Fl. Scand. I, 288

Europe; N. and W. Asia.

North America: N. S, N. Br, Q., Ont. to N. J.; W. to Dak. and E. Kan.

Minn. valley: N. E. district and E. edge; infrequent; dry fields and hillsides.

HERB.: *Herrick 96,* Minneapolis; *Oestlund 44,* Minneapolis; *Kassube 71,* Minneapolis; *Herb. Sheld. 1764,* Minneapolis.

Potentilla hippiana LEHM. Nov. Stirp. Pug. II, 7 (1830),

P. leucophylla TORR. Ann. Lyc. N. Y. II, 197, (1835).

P. pensylvanica var. *hippiana* T. and G. Fl. I, 438 (1838).

Wats. and Coult., Gray's Man. 6 ed. 159; Coult., Fl. Colo. 81; Webb., Fl. Neb. 128; Upham, Fl. Minn. 50; Mac., Fl. Can. I, 137; Roth., Wheel. Exp. 112; Wats., Bibl. Ind. I, 297.

North America: Saskatchewan to Rockies and Brit. Col.; N. to 50° N. lat.; S. to Colo., Minn., Neb., N. Mex. and Arizona.

Minn. valley: Reported from Leaf hill district; doubtful; plains and sunny hillsides.

Potentilla pensylvanica LINN. Mant. 76 (1767).

P. bipinnatifida DOUGL. Hook. Fl. Bor.-Am. I, 188 (1833).

P. pensylvanica var. *bipinnatifida* T. and G. Fl. I, 438 (1838).

Wats. and Coult., Gray's Man 6 ed. 159; Webb., Fl. Neb. 128; Upham, Fl. Minn. 50; Coult., Fl. Colo. 81; Forbes and Hems., Fl. Sin. 243; Led., Fl. Ross. II, 40; Nym., Fl. Eur.; Mac., Fl. Can. I, 516; Herd., Fl. Eur. Russ. 46; Roth., Wheel. Exp. 112; Wats., King Exp. 86, 87; Engl. Focke, Nat. Pflanz. III, 3, 34; Wats., Bibl. Ind. I, 300; Rothr., Alask. 445.

Ural and Baikal Siberia; Caucasus mts. to Japan.

North America: Labrador and Anticosti to Q., Ont., Hudson Bay, Man., Saskatchewan, Rocky mts. and N. W. T.; S. to Maine and N. H.; W. to Minn., Dak., Colo., N. Mex.

Minn. valley: Reported from S. and S. W. edge; doubtful; meadows and edges of woods.

Potentilla pensylvanica LINN. var. **strigosa** PURSH, Fl. Am. 356 (1814).

Wats. and Coult., Gray's Man. 6 ed. 159; Upham, Fl. Minn.50; Coult., Fl. Colo. 81; Webb., Fl. Neb. 128?; Mac., Fl. Can. I, 136, 517; Wats. Bibl. Ind. I, 300.

North America: Brit. Col. and Rockies to Mont., Minn., Colo. and Neb?.

Minn. valley: Throughout; infrequent; more abundant W. than E.; dry or rocky knolls.

HERB.: *Sheldon 442*, Pipestone; *Taylor 875*, Glenwood; *MacM. and Sheld. 1*, Brainerd.

Potentilla supina LINN. Spec. 497 (1753).

P. paradoxa NUTT. T. and G. Fl. I, 437 (1838).

Wats. and Coult., Gray's Man. 6 ed. 159; Coult., Fl. Colo. 84; Upham, Fl. Minn. 49; Trautv., Fl. Sib. 50; Mac., Fl. Can. I, 136; Forbes and Hems., Fl. Sin. 245; Led., Fl. Russ. II, 35; Nym., Fl. Eur.; Mac., Fl. Can. I, 516, Herd., Fl. Eur. Russ. 46; Coult., Fl. Tex. 106; Engl. Focke, Nat. Pflanz. III, 3, 34; Wats., Bibl. Ind. I, 301; Webb., Appx. Neb. 34.

Europe; N. Asia and China; S. America.

North America: Ont. to Man. and Gt. lake reg.; S. to

Minn., Mo., N. Mex. and Rio Grande; E. to Miss. river and Ohio.

Minn. valley: Throughout; infrequent; sandy shores of lakes and dry places.

HERB.: *Ballard 452*, Prior's lake, Scott Co.; *Herrick 93*, Minnetonka; *Holzinger 65*, Winona Co.; *Herb. Wickersheim 37*, Idlewild, Lincoln Co.

Potentilla millegrana ENGELM. Lehm. Ind. Sem. Hamb. (1849).

P. rivalis var. *millegrana* WATS. Rev. Pot. 553 (1871).

Wats. and Coult., Gray's Man. 6 ed. 159; Webb., Fl. Neb. 128; Coult., Fl. Colo. 178; Mac., Fl. Can. 136, 516; Greene, Fl. Fran. 65; Wats., King Exp. 85; Roth., Wheel. Exp. 112: Wats., Bibl. Ind. I, 301.

North America: Red and Saskatchewan valleys to Rocky mts.; along E. slope of Sierra Nevada to N. Mex.; S. in prairie reg. to Minn., Dak. and Neb.

Minn. valley: Far W. and N. W. on higher levels; prairies; no Minn. specimens seen.

Potentilla norvegica LINN. Spec. 449 (1753).

?*P. labradorica* LEHM. Ind. Sem. Hamb. (1849).

Wats. and Coult., Gray's Man. 6 ed. 159; Britt., Fl. N. J. 96; Upham, Fl. Minn. 49; Coult., Fl. Colo. 83; Webb., Fl. Neb. 128; Chap., Fl. S. St. 124; Hook., Fl. Gt. Brit. 126; Mac., Fl. Can. I, 136, 516; Led., Fl. Ross. II, 36; Nym., Fl. Eur.; Herd., Fl. Eur. Russ., 46; Wats., King Exp. 85; Engl. Focke, Nat. Pflanz. III, 3, 34; Wats., Bibl. Ind. I, 299; Hart., Fl. Scand. I, 289; Rothr., Alask. 445.

Mid. and N. Europe and N. Asia.

North America: N. S. and Labrador? to N. J.; W. to Minn., Dak., Mont., Colo., Neb. and Mo?.

Minn. valley: Throughout; in fields and along roads or railway embankments.

HERB.: *Taylor 930*, Glenwood; *Taylor 570*, Minnesota lake; *Taylor 797*, Glenwood; *Ballard 416*, New Prague, Scott Co.; *Ballard 663*, Waconia; *Ballard 238*, Jordan, Scott Co.; *Sheldon 343*, Lake Madison; *Sheldon 759*, Sleepy Eye; *Sheldon 211*, Lake Washington, Blue Earth Co.; *Sheldon 1123*, Springfield; *Sheldon 518*, Waseca; *Ballard 451*, Prior's lake, Scott Co., *Herrick 91*, Minneapolis; *Roberts 30*, Grand Marais; *Oestlund 41*, Minneapolis; *Arthur 9*, Vermilion lake; *Bailey 496*, Agate bay; *Sandberg 168*, Red Wing; *Herrick 92*, Minneapolis; *Kassube 69*, Minneapolis; *Herb. Moyer 73*, Montevideo.

Potentilla arguta PURSH. Fl. Am. 636 (1814).

Bootia sylvestris BIGEL. Fl. Bost. ed. 2, 206 (1824).

Potentilla confertiflora TORR. Fl, U. S. I. 499 (1824).

P. pensylvanica var. *arguta* TORR. Ann. Lyc. N. Y. II, 197 (1835).

Wats. and Coult., Gray's Man. 6 ed. 158; Britt., Fl. N. J. 96; Webb., Fl. Neb. 128; Upham, Fl. Minn. 50; Coult., Fl. Colo. 83; Mac., Fl. Can. I, 136, 516; Wats., King Exp. 89; Wats., Bibl. Ind. I, 293.

North America: N. Br., Q., Ont. to Brit. Col.; N. to lat. 65°; S. to N. J.; W. to Minn., Kan., Neb., Colo., New Mexico and Idaho.

Minn. valley: Throughout; knolls, high plains and headlands.

HERB.: *Sheldon 1315,* Lake Benton; *Ballard 570,* Prior's lake, Scott Co.; *Ballard 381,* Jordan, Scott Co.; *Ballard 188,* Jordan, Scott Co.; *Sheldon 608,* Wilton, Waseca Co.; *Sheldon 786,* Sleepy Eye; *MacMillan 13,* Glenwood; *Taylor 850,* Glenwood; *Leonard 15,* Minnehaha park; *Leonard 16,* Spring Valley; *Oestlund 45,* Minneapolis; *Bailey 412,* Agate bay; *Kassube 72,* Minneapolis; *Sandberg 171,* Cannon Falls; *Herb. Sheld 1751,* Minneapolis; *Herb. Moyer 74,* Chippewa Co.

GEUM LINN. Gen. 418 (1737).

Caryophyllata TOURN. Inst. 294 (1700).
Sieversia WILLD. Berl. Mag. V, 39 1804).
Buchavea REICH. Consp. 167 (1828).
Adamsia F. and ENDL. Gen. 6384 (1840).
Oreogeum SERINGE, DC. Prodr. II, 553 (1825).
Stylipus RAF. Neog. 3 (1825).
Waldsteinia WILLD. N. Act. Ber. II, 105 (1802).
Comaropsis L. C. RICH. Nestl. Pot. 16 (1816).
Coluria R. BR. Parr. Voy. Appx. 276 (1823).
Laxmannia F. and M. Led. Fl. Alt. II, 262 (1830).

Baillon, *Hist. Pl.* I, 466; Benth. and Hook., *Gen. Pl.* I, 619; Engler and Prantl, *Nat. Pflanz.* 3, III, 36; (Focke); Durand, *Ind. Gen. Phan.* 113.

Living species: 44±; temperate and arctic regions of N. hemisphere; a few in S. temperate regions. Russia, 10; Europe, 12; Russian Europe, 6; North America, 16–20; Mid. Calif., 2; Canada, 13; S. Sts., 4; E. Sts., 10; Pl. Wheel., 4.

Geum ciliatum PURSH, Fl. Am. 352 (1814).

G. triflorum PURSH, Fl. Am. 736 (1814).
Sieversia triflorum R. BR. Parr. 1st Voy. 276 (1824).
Geum pubescens HOOK. Fl. Bor.-Am. I, 175 (1833).

Wats. and Coult., Gray's Man. 6 ed. 157; Coult., Fl. Colo. 82; Brew. and Wats., Fl. Calif. I, 176; Upham, Fl. Minn. 49; Mac., Fl. Can. I, 134; Greene, Fl. Fran. 62; Roth., Wheel. Exp. 112; Wats., King Exp. 84; Wats., Bibl. Ind. I, 285.

North America: Labrador and Ont. to Brit. Col.; S. to N. N. Eng.; W. to Minn., Mo., Colo.; N. to Alaska and arctic circle; S. in Sierras to Calif.

Minn. valley: Throughout; dry land or high, sunny hillsides, and on bluffs and headlands.

HERB.: *Ballard 186*, Jordan, Scott Co.; *Taylor 793*, Glenwood; *Wickersheim 2*, Idlewild, Lincoln Co.; *Oestlund 40*, Ramsey Co.; *Kassube 68*, Minneapolis; *Sandberg 166*, Goodhue Co.; *Sandberg 167*, Cannon Falls; *Hammond 15*, Lake City; *Herb. Sheld. 1854*, Minneapolis; *Herb. Wickersheim 36*, Idlewild; Lincoln Co.; *Herb. Moyer 72*, Carlton lake, Montevideo.

Geum rivale LINN. Spec. 501 (1753).

Wats. and Coult., Gray's Man. 6 ed. 157; Britt., Fl. N. J. 95; Coult., Fl. Colo. 82; Upham, Fl. Minn. 49; Hook., Fl. Gt. Brit. 122; Mac., Fl. Can. I, 133, 515; Led., Fl. Ross. II, 23; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 46; Roth., Wheel. Exp. 112; Engl. Focke, Nat. Pflanz. III, 3, 37; Wats., Bibl. Ind. I, 284; Hart., Fl. Scand. I, 291.

Europe; N. and W. Asia and Australasia to S. America.

North America: Labrador, Newf., N. S., N. Br. to Q., Ont., Man. and Brit. Col.; S. to N. J.; W. to Minn., Dak., Mont., Colo. and Mo.

Minn. valley: Reported from Nicollet Co., doubtful; more certainly in vicinity of Ft. Snelling; wet fields and springs.

HERB.: *Bailey 350*, Mud river.

Geum strictum AIT. Hort. Kew. II, 217 (1789).

G. canadense MURR. Com. Goett. V, 34 (1790) *not Jacq.*

G. ranunculoides SERINGE, DC. Prodr. II, 551 (1825).

Wats. and Coult., Gray's Man. 6 ed. 157; Britt., Fl. N. J. 94; Upham, Fl. Minn. 49; Coult., Fl. Colo. 82; Webb., Fl. Neb. 128; Mac., Fl. Can. I, 133; Forbes and Hems., Fl. Sin. 269; Led., Fl. Ross. II, 23; Nym., Fl. Eur.; Miyabe, Fl. Kur. 229; Herd., Fl. Eur. Russ. 46; Engl. Focke, Nat. Pflanzen. III, 3, 37; Wats., Bibl. Ind. I, 285.

Mid. Russia; Siberia, China and Kamtk.; Kurile Isls.; New Zealand; Japan; Corea; S. America.

North America: N. S. to Coast range in Brit. Col.; Newf. to N. Eng., N. J.; W. to Minn., Dak., Neb., Kan., Colo. and Arizona

Minn. valley: Throughout; damp edges of woods and in meadows.

HERB.: *Ballard 492*, Prior's lake, Scott Co.; *Taylor 674*, Minnesota lake; *Sheldon 997*, Sleepy Eye; *Sheldon 1182*, New Ulm; *Taylor 547*, Janesville; *Ballard 369*, Helena, Scott Co.; *Sheldon 691*, Waseca; *Ballard 225*, Jordan, Scott Co ; *Taylor 797*, Glenwood; *Sheldon 1301*, Lake Benton; *Herrick 89*, Minneapolis; *Roberts 28*, Duluth; *ROberts 29*, Grand Marais; *Kassube 67*, Minneapolis; *Herrick 90*, Minneapolis; *Sandberg 165*, Cannon Falls; *Herb. Sheld. 1696*, Minneapolis.

Geum japonicum THUNB. Fl. Jap. 220 (1784).

G. macrophyllum WILLD. Enum. I, 557 (1809).

G. strictum var *B.* HOOK. Fl. Bor.-Amer. I, 175 (1833).

Wats. and Coult., Gray's Man. 6 ed. 156; Upham, Fl. Minn. 49; Coult., Fl. Colo. 82; Brew. and Wats., Fl. Calif. I, 176; Mac., Fl. Can. I, 133, 515; Miyabe, Fl. Kur. 230; Led., Fl. Ross. II, 23; Greene, Fl. Fran. 61; Roth., Wheel. Exp. 112; Wats., King Exp. 84; Engl. Focke, Nat. Pflanz. III, 3, 37; Wats., Bibl. Ind. I, 284; Rothr., Alask. 445.

Kurile Isls.; Aleutian Isls.; Kamtk.; E. Asia and Japan.

North America: N. S., N. Br., Q., Ont. to L. Superior, Coast range, Selkirks, Queen Charlotte Isls. and Alaska; N. to 51° in N. W. T.; S. to N. Eng. and W. to Minn., Mo., Colo., and S. in Sierra Nevada to Calif.

Minn. valley: Forest district and to Chippewa valley; hillsides, high bluffs and banks.

HERB.: *Ballard 876*, Waconia; *Taylor 845*, Glenwood; *Bailey 253*, Vermilion lake; *Roberts 27*, Grand Marais; *Herrick 88*, Minnetonka.

Geum virginianum LINN. Spec. 500 (1753).

G. hirsutum MUHL. Cat. 51 (1813).

G. heterophyllum DESF. DC. Prodr. II, 550 (1825).

Wats. and Coult., Gray's Man. 6 ed. 156; Britt., Fl. N. J. 94; Webb., Fl. Neb. 128; Upham, Fl. Minn. 49; Mac., Fl. Can. I, 133, 515; Wats., Bibl. Ind. I, 286.

North America: N. S., N. Br., Ont., N. Eng., N. J.; W. to Minn., Neb., Kan.

Minn. valley: Forest district and W. to Chippewa valley or beyond; edges of woods and along streams.

HERB.: *Taylor 429*, Buffalo lake, Waseca Co.; *Sheldon 287*, Madison Lake; *Sheldon 1004*, Sleepy Eye; *Sheldon 462*, Madison Lake; *Sheldon 862*, Sleepy Eye; *Sandberg 163*, Cannon Falls; *Sandberg 164*, Chisago Co.; *Herb. Moyer 71*, Montevideo.

Geum album GMEL. Syst. II, 861 (1791).

G. canadense JACQ. Hort. Vindob. II, 82 (1772) *not Murr.*

G. carolinianum WALT. Fl. Car. 150 (1788).

Caryophyllata alba MOENCH, Meth. 660 (1794).

Geum virginianum MURR. Com. Goett. V, 30 (1790).

Wats. and Coult., Gray's Man. 6 ed. 156; Britt., Fl. N. J. 94; Chap., Fl. S. St. 123; Webb., Fl. Neb. 128; Mac., Fl. Can. I, 133; Coult., Fl. Tex. 105; Cov., Fl. Ark. 179; Wats., Bibl. Ind. I, 283.

North America: N. S., N. B., Q., Ont., N. Eng., N. J. to Ga.; W. to. Dak., Neb., Kan., Ark. and W. Tex.

Minn. valley: Throughout; edges of woods and copses.

HERB.: *Taylor 892*, Glenwood; *Ballard 419*, New Prague, Scott Co.; *Taylor 613*, Minnesota lake; *Ballard 872*, Waconia; *Ballard 294,* Jordan, Scott Co.; *Kassube 66,* Minneapolis; *Sandberg 162,* Cannon Falls; *Herb. Sheld. 1748,* Minneapolis; *Herb. Moyer 70,* Montevideo.

AGRIMONIA LINN. Gen. 388 (1737).
Aremonia NECK. Elem. 768 (1790).
Amonia NESTL. Pot. 17 (1816).
Spallanzania POLL. Veron. 10 (1816).

Baillon, *Hist. Pl.* I, 462; Benth. and Hook., *Gen. Pl.* I, 622; Durand, *Ind. Gen. Phan.* 114; Engler and Prantl, *Nat. Pflanz.* 3, II, 43.

Living species: 10; 20+ described; 6–8 (B. and H.); temperate regions, N. hemisphere; tropical mts. and S. America. Russia, 4; Europe, 4; Russian Europe, 3; North America, 3; Calif., 1; S. Sts., 3; other regions, 1; 1 sp. through Asia, Europe and North America (ours).

Agrimonia eupatoria LINN. Spec. 448 (1753).

Wats. and Coult., Gray's Man. 6 ed. 161; Britt., Fl. N. J. 97; Webb., Fl. Neb. 128; Upham, Fl. Minn. 49; Coult., Fl. Colo. 87; Chap., Fl. S. St. 122; Brew. and Wats., Fl. Calif I, 185; Hook., Fl. Gt. Brit. 128; Mac., Fl. Can. I, 142; Forbes and Hems., Fl. Sin. 246; Led., Fl. Ross. II, 31; Nym., Fl. Eur.; Mac., Fl. Can. I, 518; Miyabe, Fl. Kur. 232; Herd., Fl. Eur. Russ. 46; Greene, Fl. Fran. 61; Roth , Wheel. Exp. 115; Cov , Fl. Ark. 179; Engl. Focke, Nat. Pflanz. III, 3, 43; Wats., Bibl. Ind. I, 271; Hart., Fl. Scand. I, 277.

Europe, exc. N. Scand. and N. Russ.; N. Asia and China; Himalayas; N. and S. Africa.

North America: Newf., N. S. to N. J., Fla. and Miss.; W. to Man., Minn., Neb., Colo., Ark. and N. Mex.; also in Pac. coast reg.; Washington to S. Calif.

Minn. valley: Forest district and W. to Chippewa valley or beyond; edges of thickets and woodland openings.

HERB.: *Ballard 805,* Goose lake; *Sheldon 868,* Sleepy Eye; *Ballard 692,* Waconia; *Ballard 491,* Prior's lake, Scott Co.; *Taylor 941,* Glenwood; *Sheldon 1183,* New Ulm; *Bailey 191,* Vermilion lake; *Arthur 164,* Vermilion lake; *Roberts 26,* Duluth; *Sandberg 160,* Goodhue Co.; *Sandberg 161,* Cannon Falls; *Kassube 65,* Minneapolis.

ROSA LINN. Gen. 412 (1737).
Hulthemia DUM. Not. Hulth. (1840).
Lowea LINDL. Bot. Reg. 1261 (1842?).
Rhodophora NECK. Elem. 748 (1790).
Rhodopsis LED. Fl. Alt. II, 224 (1830),

Baillon, *Hist. Pl.* I, 461; Benth. and Hook., *Gen. Pl.* I, 625; Durand, *Ind. Gen. Phan.* 114; Engler and Prantl, *Nat. Pflanz.* 3, III, 46; Schenck, *Palaeophyt.* 667.

Living species: 600+ described; 100— distinct; 30 (B. and H.); 50–55 (Durand); N. hemisphere to Abyssinia, S. India and Mexico; temperate, subalpine and subtropical zones. Russia, 17; Europe, 41; Russian Europe, 16; North America, 20–25; Canada, 18–20; E. Sts., 10–11; S. Sts., 5–6; Rocky mts., 7; California, 8–10; Pl. Wheel., 5–6; Pl. King, 2; W. Tex., 4.

Fossil species: Oligocene, Bonn (*Weber.*); Rixhoft (*Heer*); Florissant, Colo. (*Lesquereaux*).

Rosa humilis MARSH. Arbust. Amer. 136 (1785).

? *R. parviflora* EHRH. Beitr. IV, 21 (1789).
R. lucida AUCT. AMER. principally.
R. caroliniana MICHX. Fl. N. Am. I, 295 (1803).
R. lyonii PURSH, Fl. Am. 345 (1814).

Wats. and Coult., Gray's Man. 6 ed. 163; Upham, Fl. Minn. 52; Chap., Fl. S. St., 126; Mac., Fl. Can. I, 143; Cov., Fl. Ark. 179; Engl. Focke, Nat. Pflanz. III, 3, 48; Wats., Bibl. Ind. I, 311.

North America: Newf., N. S., Q., Ont. to L. Huron reg.; S. to Maine, N. J. and Ga.; W. to Minn., Mo., Ark., Ind. Terr. and La.

Minn. valley: Reported from N. E. district and E. edge; dry soil or edges of marshes; no Minn. specimens seen.

Rosa carolina LINN. Spec. 2 ed. 703 (1762).

R. virginiana DUROI, Obs. Bot. 21 (1771).
R. corymbosa EHRH. Beitr. IV, 21 (1789).
R. carolinensis MARSH. Arbust. Amer. 135 (1785).
R. pennsylvanica MICHX. Fl. N. Am. I, 296 (1803) *in part.*
R. flexuosa RAF. Prec. Decouv. 35 (1814).
R. cinnamomea var. *gemella* SERINGE, DC. Prodr. II, 605 (1825).

Wats. and Coult., Gray's Man. 6 ed. 163; Britt., Fl. N. J. 98; Chap., Fl. S. St 126; Upham, Fl. Minn. 52; Mac., Fl. Can. I, 143, 519; Cov., Fl. Ark. 179; Engl. Focke, Nat. Pflanz. III, 3, 48; Wats , Bibl. Ind. I, 310.

North America: Q.? and Ont. to N. Car. and Fla.; W. to Minn., Ark., Miss. and La.

Minn. valley: Forest district to Blue Earth Co.; rare; low grounds and borders of swamps.

Rosa pisocarpa GRAY, Proc. Am. Acad. VIII, 382 (1882).

R. woodsii LINDL. Ros. Monog. 21 (1820) *chiefly.*
? *R. rafinesquii* SERINGE, DC. Prodr. II, 611 (1825) *in part.*
R. fendleri CREPIN, Prim. Ros. 432 (1880) *included.*

Wats. and Coult., Gray's Man. 6 ed. 163; Webb., Fl. Neb. 127; Coult., Fl. Colo. 88; Upham, Suppl. Minn. 47; Mac., Fl. Can. I, 521; Wats., Bibl. Ind. 313; Brew. and Wats., Fl. Calif. I, 187?.

North America: Saskatchewan, Gt. Slave lake and N. W. T. to Alaska?; W. to Rockies and N. to lat. 51°; S. to Minn., Mo., Colo., N. Mex. and W. to Mont. and Calif?.

Minn. valley: Reported from N. E. district, but no Minn. specimens seen.

Rosa acicularis LINDL. Monog. Ros. 44 (1820).

R. sayi SCHWEIN. Keat. Narr. II, Appx. 113 (1825).
R. acicularis var. *bourgeauiana* CREPIN, Prim. Ros. 386, 390 (1880).
R. engelmanni S. WATS. Proc. Am. Acad. XX, 342 (1885).

Wats. and Coult., Gray's Man. 6 ed. 162; Upham, Suppl. Minn. 47; Coult., Fl. Colo. 87; Mac., Fl. Can. I, 144, 520, II, 320; Trautv., Fl. Sib. 54 in var.; Nym., Fl. Eur.; Forbes and Hems., Fl. Sin. 248; Herd., Fl. Eur. Russ.

N. Europe; W. and N. Asia to China.

North America: Wisc., Mich. and Minn.; N. to Man., N. W. T. and Alaska; W. to Mont. and Pac. coast, in Oregon and Brit. Col.

Minn. valley: N. E. district and N. edge; rare; woodland openings and banks of streams.

HERB.: *Arthur 81*, Two Harbors; *Bailey 84*, Vermilion lake; *Bailey 223*, Vermilion lake.

Rosa virginiana MILL. Dict. (1768).

R. blanda AIT. Hort. Kew. II, 202 (1789).
R. fraxinifolia GMEL. Fl. Bad. II, 413 (1806).
R. gemella WILLD. Enum. 544 (1809) *mainly*.
R. cinnamomea var. *glabella* SERINGE, DC. Prodr. II, 605 (1825).
R. blanda var. *pubescens* CREPIN, Prim. Ros. 394 (1880).

Wats. and Coult., Gray's Man. 6 ed. 162; Upham, Fl. Minn. 52; Upham, Suppl. Minn. 47; Webb., Fl. Neb. 127; Coult., Fl. Colo. 87; Britt., Fl. N. J. 98; Mac., Fl. Can. I, 194, 519; Cov., Fl. Ark. 179; Wats., Bibl. Ind. I, 309.

North America: Newf., Q. to N. J.; W to Hudson Bay, Brit. Col?, L. Winnipeg, Minn., Dak., Neb. and Ark.; and possibly also in Colo.

Minn. valley; Throughout, common; banks, rocks, hillsides and low prairies.

HERB.: *Taylor 844½*, Minnesota lake; *Taylor 844*, Glenwood; *Taylor 272*, Janesville; *Ballard 21*, Chaska; *Ballard 223*, Jordan, Scott Co.; *Sheldon 1347*, Verdi, Lincoln Co.; *Ballard 89*, Chaska; *Sheldon 368*, Madison Lake; *Taylor 15*, Elysian; *Bailey 34*, Vermilion lake; *Sandberg 184*, Cannon Falls; *Sandberg 185*, Cannon Falls· *Kassube 81*, Minneapolis; *Kassube 82*, Minneapolis; *Holzinger 71*, Winona Co.; *Hammond 16*, Lake City; *Herb. Sheld. 1804*, Minneapolis; *Herb. Wickersheim 44*, Idlewild, Lincoln Co.; *Herb. Moyer 78*, Montevideo.

Rosa virginiana var. **arkansana** (PORTER).

R. arkansana PORT. Fl. Colo. 38 (1874).
R. blanda var. *setigera* CREPIN, Prim. Ros. 394 (1880).
R. blanda var. *arkansana* BEST, Torr.-Bull. XVII, 145 (1890).

Wats. and Coult., Gray's Man. 6 ed. 163; Webb., Fl. Neb. 127; Coult., Fl. Colo. 87; Mac., Fl. Can. I, 520; Coult., Fl. Tex. 106; Roth, Wheel. Exp. 115; Cov., Fl. Ark. 179; Wats., Bibl. Ind. I, 310; Upham. Suppl. Minn. 47.

North America: Man., N. W. T. and Rockies of Brit. Col. to Minn., Neb., Mo., Ark. and Tex., W. to Arizona, Colo. and Mont.

Minn. valley: Forest district and probably sparingly westward; dry sunny hillsides and banks.

HERB.: *Ballard 407*, New Prague; *Ballard 567*, Prior's lake, Scott Co.; *Ballard 92*, Shakopee; *Ryan 1*, Goodhue Co.; *Roberts 35*, Duluth; *Leonard 17*, Spring Valley.

PRUNUS JUSS. Gen. 341 (1774) *em.*

Armeniaca Juss. Gen. 341 (1774).
Prunophora NECK. Elem. II, 71 (1790).
Amygdalopsis CARRIERE, Rev. Hortic. 91 (1862).
Prunopsis ANDRE, ex Durand Ind. Phan. 111 (1888).

Baillon, *Hist. Pl.* I, 417, 418; Benth. and Hook., *Gen. Pl.* I, 609, 610; Durand, *Ind. Gen. Phan.* l. c.; Schenck, *Palaeophyt.* 674; Engler and Prantl, *Nat. Pflanz.* 3, III, 51, *seq.* (Focke).

Living species: 20±; temperate regions, N. hemisphere; North America. 8–10; Calif., 2; Canada, 3; S. Sts., 6–7; E. Sts., 2; Rocky mts., 4–5; Pl. King, 2; Russia, 4–5; Europe, 6.

Fossil species: 10–12; Tertiary; Siberia (*Heer*); Spitzbergen (*Unger*); Germany (*Weber*); Greenland (*Heer*); Russia (*Heer*, *Ettinghausen*).

Prunus americana MARSH. Arbust. Am. 111 (1785).

? *P. mississippi* MARSH. Arbust. Am. 112 (1785).
? *P. spinosa* WALT. Fl. Car. 146 (1788).
P. hiemalis MICHX. Fl. N. Amer. I, 284 (1803) *in part.*
P. nigra MUHL. Cat. 49 (1817).
Cerasus hiemalis DC. Prodr. II, 538 (1825) *in part.*
C. nigra HOOK. Comp. Bot. Mag. I, 24 (1835).
C. americana HOOK. Comp. Bot. Mag. I, 24 (1835).

Wats. and Coult., Gray's Man. 6 ed. 151; Britt., Fl. N. J. 91; Upham, Fl. Minn. 48; Webb., Fl. Neb. 128; Chap., Fl. S. St. 119; Coult., Fl. Colo. 76; Mac., Fl. Can. I, 124; Coult., Fl. Tex. 102; Cov., Fl. Ark. 178; Engl. Focke, Nat. Pflanz. 3, III, 53; Wats., Bibl. Ind. I, 303; Sarg., N. Am. Silva IV, 19.

North America: N. Y. and N. J. to Fla.; W. to Mont., Colo., N. Mex. and Mexico.

Minn. valley: Throughout; thickets and along banks of streams and by prairie sloughs.

HERB.: *Kassube 60*, Minneapolis; *Sandberg 149*, Red Wing; *Herb. Wickersheim 34*, Idlewild, Lincoln Co.; *Herb. Moyer 67*, Montevideo.

CERASUS Juss. Gen. 340 (1774).

Ceraseidos S. and Z. Abh. Münch. Akad. III, 743 (——).
Cerasophora Neck. Elem. 720 (1790).
Tubopadus Pomel, Nat. Atlant. 8 (1860).

Baillon, *Hist. Pl.* I, 419; Benth. and Hook., *Gen. Pl.* I, 609, 610; Durand, *Ind. Gen. Phan.* 112; Schenck, *Palaeophyt.* 676; Engler and Prantl, *Nat. Pflanz.* III, 3, 54 (Focke); Sarg., *N. Am. Silva* IV, 8.

Living species: 15+; temperate and warmer regions, N. hemisphere.

Fossil species: 2–3; Tertiary, Europe (*Unger*) and Leoben (*Ettinghausen*).

Cerasus pumila (Linn.) Michx. Fl. N. Am. I, 286 (1803.)

Prunus pumila Linn. Mant. 75 (1767).
Cerasus glauca Moench, Meth. 672 (1794).
Prunus depressa Pursh, Fl. Am. 332 (1814).
P. cuneata Raf. Ann. Nat. 11 (1820).
Cerasus depressa Seringe, DC. Prodr. II, 538 (1825).

Wats. and Coult., Gray's Man. 6 ed. 152; Upham, Fl. Minn. 48; Webb., Fl. Neb. 129; Britt., Fl. N. J. 92; Mac., Fl. Can. I, 124; Cov., Fl. Ark. 178; Wats., Bibl. Ind. I, 306.

North America: Montreal to Gt. lakes and 106th mer.; N. Br. to N. Eng., N. J. and Va.; W. to Dak., Neb., Kan. and Ark.

Minn. valley: S. edge and in vicinity of Ft. Snelling; local; sandy banks and rocky places.

Herb.: *Sheldon 1484*, Pipestone City; *Sandberg 150*, Goodhue Co.; *Kassube 61*, Minneapolis; *Sandberg 151*, Two Harbors.

Cerasus serotina (Ehrh.) Loisel. Nouv. Duham. V, 3, (1814).

P. virginiana Mill. Dict. (1768).
Prunus serotina Ehrh. Beitr. III, 20 (1788).
Cerasus virginiana Michx. Fl. N. Am. I, 285 (1803).
Prunus cartilaginea Lehm. Ind. Sem. Hamb, (1833).
Padus virginiana Roem. Syn. Monog. III, 86 (1847).
P. cartilaginea Roem. Syn. Monog. III, 86 (1847).
P. serotina Agh. Theor. Syst. t. 14, f. 8 (1858).

Wats. and Coult., Gray's Man. 6 ed. 152; Britt., Fl. N. J. 92; Webb., Fl. Neb. 129; Upham, Fl. Minn. 48; Chap., Fl. S. St. 120; Mac., Fl. Can. I, 126, 513; Cov., Fl. Ark. 178; Coult., Fl. Tex. 103; Engl. Focke, Nat. Pflanz. 3, III, 55; Wats., Bibl. Ind. I, 307; Sarg., N. Am. Silva IV, 45.

Peru and Colombia,

North America: N. S., N. Br., Ont. to Man.; S. to N. J. and Fla.; W. to Dak., Neb., Kan., Ind. Terr., La. and Tex.; also, Arizona, Mexico and C. America (mts.).

Minn. valley: Forest region; woods and shaded lake shores or banks.

HERB.: *Taylor 482,* Janesville; *Taylor 612,* Minnesota lake; *Taylor 480,* Janesville; *Sheldon 100,* Elysian; *Sheldon 310,* Madison Lake; *Ballard 346,* Helena, Scott Co.; *Herrick 85,* Minneapolis; *Sandberg 154,* Red Wing; *Herb. Sheld. 1853,* Minneapolis.

Cerasus virginiana (LINN.) LOISEL. Nouv. Duham. V, 3, (1814).

Prunus virginiana LINN. Spec. 473 (1753) *excl. syn.*
Padus rubra MILL. Dict. (1768).
Prunus nana DU ROI, Harbk. Baumz. II, 194 (1772).
Prunus-Cerasus canadensis MARSH. Arbust. Amer. 113 (1785).
Prunus rubra AIT. Hort. Kew. II, 162 (1789).
Padus oblonga MOENCH, Meth. 671 (1794).
Prunus serotina POIR. Enc. Meth. V, 665 (1804).
P hirsuta ELL. Sk. I, 541 (1821).
P. obovata BIGEL. Fl. Bost. ed. 2, 192 (1824).
Cerasus serotina HOOK. Fl. Bor.-Am. I, 169 (1833) *excl. syn.*
C. obovata BECK, Bot. 97 (1833).
C. micrantha, densiflora, fimbriata and *hirsuta* SPACH, Suit. Buff. I, 414-417 (1834).
C. virginiana var. *B.* T. and G. Fl. I, 410 (1838).
C. duerinckii MART. Sel. Sem. Lovan. (1840).
Prunus duerinckii WALP. Rep. II, 10 (1843).
Padus fimbriata, densiflora, micrantha, obovata and *hirsuta* ROEM. Syn. Monog. III, 84-87 (1847).

Wats. and Coult., Gray's Man. 6 ed. 152; Britt., Fl. N. J. 92; Webb., Fl. Neb. 129; Coult., Fl. Colo. 77; Chap., Fl. S. St. 120; Upham, Fl. Minn. 48; Mac., Fl. Can. I, 125; Coult., Fl. Tex. 103; Wats., King. Exp. 80; Engl. Focke, Nat. Pflanz. III, 3, 55; Wats., Bibl. Ind. I, 307; Sarg., N. Am. Silva IV, 41.

North America: Labr., Newf., N. S., N. Br. to Man., Brit. Col. and Pac.; N. on Mackenzie river to 62°; U. S. to Ga., Tex. and Mex.; Calif. and Oregon.

Minn. valley: Throughout, banks of streams and shores of lakes.

HERB.: *Taylor 713,* Minnesota lake; *Taylor 489,* Janesville; *Sheldon 35,* Elysian; *Sheldon 384,* Madison Lake; *Ballard 541,* Cleary's lake, Scott Co.; *Bailey 238,* Vermilion lake; *Herrick 84,* Minneapolis; *Kassube 62,* Minneapolis; *Bailey 419,* Long lake; *Sandberg 153,* Cannon Falls; *Herb. Moyer 68,* Montevideo; *Herb. Wickersheim 35,* Idlewild, Lincoln Co.; *Herb. Sheld. 1855,* Minneapolis; *Herb. Moyer 251,* Montevideo.

Cerasus pensylvanica (LINN. f.) LOISEL. Nouv. Duham. V, 9 (1814).

Prunus pensylvanica LINN. f. Syst. ed. 13, Suppl. 252 (1781).
Prunus-Cerasus montana MARSH. Arbust. Am. 113 (1785).
Prunus lanceolata WILLD. Berl. Baumz. 240 (1796).

Cerasus borealis Michx. Fl. Bor.-Am. I, 286 (1803).
Prunus borealis Poir. Enc. Meth. V, 674 (1804).
P. persicifolia Desf. Hist. Arb. II, 205 (1809).
Cerasus persicifolia Loisel. Nouv. Duham. V, 9 (1814).

Wats. and Coult., Gray's Man. 6 ed. 152; Britt., Fl. N. J. 92; Upham, Fl. Minn. 48; Chap., Fl. S. St. 120; Coult., Fl. Colo. 77; Mac., Fl. Can. I, 125; Wats., Bibl. Ind. I, 306; Sarg., N. Am. Silva, IV, 35.

North America: Newf., N. S., N. Br. to Man., Brit. Col. and Coast range; N. to Hudson Bay; S. to N. Eng., N. J. and mts. of N. Car.; W. to Minn., Colo., Tenn. and Kan.

Minn. valley: Forest district; in dry woods, hillsides and river banks; N. E. and E.; N. edge.

Herb.: *Ballard 347,* Helena, Scott Co.; *Ballard 156,* Chaska; *Sheldon 658,* Waseca; *Bailey 169,* Vermilion lake; *Bailey 351,* Mud river; *Herrick 83,* Minneapolis; *Sandberg 152,* Red Wing; *Herb. Moyer 250,* Montevideo.

LII. LEGUMINOSAE. Pulse Family.

Endlicher, *Gen. Pl.* 1253 (1840); Lindl. Veg. King. 544 (1846)—*Fabaceae;* Benth. and Hook., *Gen. Pl.* I, 434 (1865); Baillon, *Hist. Pl.* II, 21 (1869, 1870); Taubert *in Engler and Prantl, Nat. Pflanz.* 3, III, 70 (1891).

Genera: 400±; cosmopolitan, except in far antarctic islands and rare in New Zealand; sub-family *Mimosoideae* centers in tropical America; sub-family *Caesalpinioideae,* in Brazil; *Papilionatae* in the steppes of Asia where there are 1250 species of *Astragalus (Tragacantha)* alone. Fossil genera; 6 doubtful; 1 described; Tertiary and Quaternary.

Species: 7500±, 80 per cent.+, in the *Papilionatae;* all regions of the earth.

ACUANIA Med. Theod. Sp. Pg. 62 (1786).

Desmanthus Willd. Spec. IV, 1044 (1805) *in part.*
Darlingtonia DC. Ann. Sci. Nat. Ser. 1, IV, 97 (1824).

Baillon, *Hist. Pl.* II, 67; Benth. and Hook., *Gen. Pl.* I, 592; Durand, *Ind. Gen. Phan.* 109; O. Kuntze, *Rev. Gen.* I, 158; Engler and Prantl, *Nat. Pflanz.* 3, III, 117 (Taubert).

Living species: 10; N. and S. America; 1 sp. around the world in tropical regions. North America, 8–9; W. Tex., 8; E. Sts., 2; S. Sts., 1; Pl. Wheel., 2; mostly subtropical.

Acuania illinoensis (Michx.) OK. Rev. Gen. I, 158 (1891).

Mimosa illinoensis Michx. Fl. N. Am. II, 254 (1803).
Acacia brachyloba Willd. Spec. IV, 1071 (1805).
Darlingtonia brachyloba DC. Mem. Leg. 427 (1824).
D. brevifolia Raf. N. Fl. I, 42 (1836).
Desmanthus brachylobus Benth. Hook. Journ. Bot. IV, 358 (1842).
D. illinoensis MacM. MSS. (1889).

Wats. and Coult., Gray's Man. 6 ed. 149; Upham, Fl. Minn. 48.

North America: Ind. and Ky. to Minn., Mo., Ark. and Tex.; also in Fla.

Minn. valley: Reported from Swan lakes, Redwood Co.

CASSIA Linn. Gen. 347 (1737).

Herpetica Rumph. ex Baillon Hist. Pl. II, 124 (1870).
Bactyrilobium Willd. Enum. 439 (1809).
Cathartocarpus Pers. Syn. I, 459 (1805).
Chamaecrista E Mey. Comm. Afr. Austr.
Grimaldia Schrank, Münch. Dst. 103 (1808).
Psilorhegma Vog. Syn. Cass. (1837).
Macleaya Montz. Mem. Acad. Lyon. X, 199 (1846).
Senna Gaertn. Fruct. II, 312 (1791).
Xamacrista Raf. Sylv. Tell. 127 (1836).

Baillon, *Hist. Pl.* II, 187; Benth. and Hook., *Gen. Pl.* I, 571, 1003; Durand, *Ind. Gen. Phan.* 106; Schenck, *Paleophyt.* 697; Engler and Prantl, *Nat. Pflanz.* 3, III. 157 (Taubert).

Living species: Described, 475; distinct, 380±; all temperate and warmer regions. North America, 20–22; W. Tex., 9; S. Sts., 7; E. Sts., 4; Calif., 2; Rocky mts., 1; Pl. Wheel., 5. Center in Middle and S. America.

Fossil species: Several described; Cretaceous of Bohemia and Greenland (*Heer*); Tertiary, S. France, Germany, Switzerland (*Unger, Heer*); Pliocene, valley of the Andes (*Unger*); North America, Tertiary!

Cassia chamaecrista Linn. Spec. 379 (1753),

C. pulchella Salisb. Prodr. 326 (1796).
C. fasciculata Michx. Fl. N. Am. I, 262 (1803).
Xamacrista triflora Raf. Sylv. Tellur. 127 (1838).

Wats. and Coult., Gray's Man. 6 ed. 148; Britt., Fl N. J. 90; Webb., Fl. Neb. 129; Chap., Fl. S. St. 115; Upham, Fl. Minn. 47; Coult., Fl. Colo. 73; Coult., Fl. Tex. 92; Cov., Fl. Ark. 178; Wats., Bibl. Ind. I, 206.

North America: N. Eng. and N. J. to Fla. and Miss.; W. to Minn., Dak., Colo., Neb., Ark. and W. Tex. on the Rio Grande.

Minn. valley: throughout; especially in prairie districts; sunny banks, roadsides and along streams.

Herb.: *Sheldon 1213*, New Ulm; *Sheldon 812*, Cottonwood river, near Sleepy Eye; *Sheldon 618*, Wilton, Waseca Co.; *Kassube 59*, Minneapolis; *Oestlund 38*, Minneapolis; *Holzinger 63*, Winona Co.; *Sandberg 148*, Cannon Falls; *Holzinger 64*, Winona Co.

GYMNOCLADUS Lam. Enc. Meth. I, 733 (1783) *in part.*

Guilandina Linn. Gen. ed. V, 464 (1754) *in part.*

Baillon, *Hist. Pl.* II, 175; Benth. and Hook., *Gen. Pl.* I, 568; Durand, *Ind. Gen. Phan.* 105; Schenck, *Palaeophyt.* 695.

Living species: 2; North America, 1; E. China, 1.

Fossil species: Tertiary of Europe (*Saporta*); 1 sp.

Gymnocladus dioicus (LINN.) KOCH, Dendr. I, 5 (1869).

Guilandina dioica LINN. Spec. 381 (1753).
Gymnocladus canadensis LAM. Enc. Meth. I, 733 (1783).
Hyperanthera dioica VAHL, Symb. I, 31 (1790).

Wats. and Coult., Gray's Man. 6 ed. 148; Webb., Fl. Neb. 129; Upham, Fl. Minn. 48; Mac., Fl. Can. I, 123, 512; Herd., Fl. Eur. Russ. 44; Cov., Fl. Ark. 177; Wats., Bibl. Ind. I, 222; Sarg., N. A. Silv. III, 69.

Introduced sparingly in Russia.

North America: S. Ont., W. N. Y. and Penn.; W. to S. Minn., E. Neb., E. Kan., S. W. Ark.; S. to Tenn. and Ind. Terr.

Minn. valley: Forest district, especially S. W. to Cottonwood valley and New Ulm.

HERB.: *Sheldon 778,* Cottonwood river, near Sleepy Eye; *Sheldon 655,* Waseca; *Sheldon 454,* Madison Lake.

BAPTISIA VENT. Dec. Gen. Nov. 9 (1808).

Crotalopsis MICHX. MSS. ex DC. Mem. Leg, 4 (1825).

Baillon, *Hist. Pl.* II, 349; Benth. and Hook., *Gen. Pl.* I. 466; Durand, *Ind. Gen. Phan.* 87.

Living species: 14; North America; S. Sts., 14; Canada, 2; E. Sts., 6.

Baptisia leucophaea NUTT. Gen. I, 282 *and add.* (1818).

Podalyria bracteata MUHL. Cat. ed. 2, 42 (1818).

Wats. and Coult., Gray's Man. 6 ed. 126; Britt., Fl. N. J. 80; Webb., Fl. Neb. 133; Upham, Fl. Minn. 47; Chap., Fl. S. St. 112; Cov., Fl. Ark. 173; Wats., Bibl. Ind. I, 204.

North America: Mich. to Minn. and Neb.; S. to Ark., Tex. and Ga,; adv. in N. J. and along Atl. coast.

Minn. valley: S. edge and extending to N. E. district; absent in most districts; fields, pastures and meadows.

HERB.: *Juni 2,* "Minnesota;" *Holzinger 62.* Winona Co.

Baptisia leucantha T. and G. Fl. I, 385 (1838).

Podalyria alba SIMS, Bot. Mag. 1177 (1809).
Baptisia alba HOOK. Fl. Bor.-Am. I, 129 (1833) *not R. Br.* (1810).

Wats. and Coult., Gray's Man. 6 ed. 126; Webb., Fl. Neb. 133; Chap., Fl. S. St. 112; Upham, Fl. Minn. 47; Mac., Fl. Can. I, 123; Cov., Fl. Ark. 173; Wats., Bibl. Ind. I, 204.

North America: Ont. to Ohio, S. Car. and Fla.; W. to Minn., Neb., Ark. and La.

Minn. valley: Reported as frequent; W. to Chippewa river, and especially N. E. and E.; banks of streams.

HERB.: *Leonard 14,* Washington P. O.; *Sandberg 147,* White Rock.

Baptisia tinctoria (LINN.) R. BR. Ait. f. Hort. Kew. III, 6 (1811).

Sophora tinctoria LINN. Spec. 373 (1753).
Podalyria tinctoria LAM. Ill. II, 471 (1793).

Wats. and Coult., Gray's Man. 6 ed. 125; Britt., Fl. N. J. 80; Chap., Fl. S. St., 111, Upham, Fl. Minn. 47; Mac., Fl. Can. I, 123, 512; Cov., Fl. Ark. 173; Wats., Bibl. Ind. I, 205.

North America: Ont. and N. Eng. to N. J. and Fla.; W. to Minn., Ark. and La.

Minn. valley: Reported from Dakota Co. and the vicinity of Ft. Snelling; sandy soil and hillsides.

HERB.: *Manning 2,* Lake City.

FALCATA GMEL. Syst. 1131 (1791).

Amphicarpaea DC. Prodr. II, 383 (1825).
Amphicarpa ELL. Jour. Acad. Phil. I, 372 (1828).
Cryptolobus SPRENG. Syst. III, 218 (1826) *in part.*
Savia RAF. N. Y. Med. Rep. II, hex. V, 350 (1808) *not W.*
Xypherus RAF. Journ. Phys. LXXXIX, 260 (1819).

Baillon, *Hist. Pl.* II, 253; Benth. and Hook. *Gen. Pl.* I, 529; Durand, *Ind. Gen. Phan.* 98; O. Kuntze, *Rev. Gen.* I, 185.

Living species: 7; North America, Japan and Himalayas; N. America, 2; Canada, 1; S. Sts., 2; E. Sts., 2.

Falcata comosa (LINN.) OK. Rev. Gen. I, 182 (1891).

Glycine comosa LINN. Spec. 754 (1753).
G. monoica LINN. Spec. ed. 2, 1023 (1762).
Anonymus caroliniensis WALT. Fl. Car. 188 (1788).
Glycine sarmentosa ROTH, Catalect. II, 87 (1800).
Amphicarpaea sarmentosa NUTT. Gen. II, 114 (1818).
A. monoica ELL. Jour. Acad. Phil. I, 373 (1818).
A. comosa RIDD. Syn. Fl. W. S. 26 (1835).
Phaseolus monoicus EAT. and WR. Man. 353 (1840).

Wats. and Coult., Gray's Man. 6 ed. 146; Britt., Fl. N. J. 89; Webb., Fl. Neb. 130; Upham, Fl. Minn. 47; Chap., Fl. S. St. 107; Mac., Fl. Can. I, 123; Cov., Fl. Ark. 177; Wats., Bibl. Ind. I, 188.

A closely related species in China.

North America: N. Br., Q., Ont. to Man.; S. to N. Eng., N. J., Fla. and Miss.; W. to Minn., Neb., Kan. and Ark.

Minn. valley: Throughout; woods and riverbanks; common.

HERB.: *Sheldon 1562,* Lake Benton; *Taylor 233,* Janesville; *Taylor 333,* Janesville; *Sheldon 1052,* Sleepy Eye; *Taylor*

944, Glenwood; *Oestlund 36*, Minneapolis; *Oestlund 37*, Hennepin Co.; *Sandberg 146*, Red Wing; *Herb. Moyer 66*, Chippewa river near Montevideo.

PHASEOLUS LINN. Gen. 573 (1737).

Strophostyles ELL. Bot. Sk. Car. II, 229 (1824).

Phasellus MOENCH, Meth. 240 (1794).

Baillon, *Hist. Pl.* II, 240; Benth. and Hook., *Gen. Pl.* I, 538; Durand, *Ind. Gen. Phan.* 100; Schenck, *Palaeophyt.* 684.

Living species: 150 described; 60 reduced. All temperate and tropical regions. Russian Europe, 1; North America, 15; S. Sts., 4; E. Sts., 4; W. Tex., 9; Canada, 1; Pl. Wheel., 2.

Fossil species: Tertiary, old world, (*Unger*). Doubtful.

Phaseolus pauciflorus BENTH. Comm, Legum. Gen. 76 (1837).

Strophostyles pauciflorus S. WATSON, Wats. and Coult., Gray's Man. 6 ed. 145 (1890).

Webb., Fl. Neb. 130; Upham, Fl. Minn. 47; Coult., Fl. Tex. 90; Cov., Fl. Ark. 177; Wats., Bibl. Ind. I, 250.

North America: Ind. to Minn. and Neb.; S. to Ark.; Miss. and Tex.

Minn. valley: Reported as frequent in forest district; shaded banks and shores of lakes.

HERB.: *Sandberg 145*, Red Wing.

Phaseolus angulosus (MUHL.) ORT. Nov. Pl. 24 (1810?).

? P. helvolus LINN. Spec. 224 (1753) *in part.*

Glycine angulosa MUHL. Willd. Spec. III, 1056 (1802).

Phaseolus diversifolus PERS. Syn. II, 296 (1807).

Strophostyles angulosa ELL. Sk. II, 229 (1824).

Wats. and Coult., Gray's Man. 6 ed., 145; Britt., Fl. N. J. 90; Upham, Fl. Minn. 47; Chap., Fl. S. St. 106; Webb., Fl. Neb. 129; Mac., Fl. Can. I, 122; Coult., Fl. Tex. 90; Wats., Bibl. Ind. I, 250.

North America: Q., Ont. to Mass. and N. J.; S. to Fla. and Miss.; W. to Minn. Neb., Kan. and Tex.

Minn. valley: Forest district to Blue Earth Co. and New Ulm; sandy fields and shaded riverbanks.

HERB.: *Leiberg 17*, Blue Earth Co.; *Sandberg 143*, Red Wing; *Sandberg 144*, Goodhue Co.

Phaseolus polystachyos (LINN.) B. S. P. Cat. N. Y. (1888).

Dolichos polystachyos LINN. Spec. 726 (1753).

Phaseolus perennis WALT. Fl. Car. 182 (1788).

P. paniculatus MICHX. Fl. N. Am. II, 60 (1803).

P. macrostachys ELL. Journ. Acad. Phil. I, 324 (1828).

Wats. and Coult., Gray's Man. 6 ed. 144; Britt., Fl. N. J. 89; Webb., Fl. Neb. 130; Upham, Fl. Minn. 47; Chap., Fl. S. St. 106; Wats., Bibl. Ind. I, 250.

North America: N. Eng. to N. J., Fla. and Miss.; W. to Minn., Neb., Kan. and La.

Minn. valley: Reported from N. E, district; Ft. Snelling; thickets and edges of woods; shady riverbanks.

LATHYRUS LINN. Gen. 590 (1737).

Clymenum TOURN. Inst. 218 (1700).

Ochrus, Aphaca and **Nissolia** TOURN. l. c. 396, 399, 656 (1700).

Orbus LINN. Gen. 591 (1737).

Cicerella MOENCH, Meth. 63 (1794).

Astrophia NUTT. T. and G. Fl. N. Am. I, 278 (1838).

Platystylis SWEET, Brit. Fl. Gard. 239 (1829).

Aneurus E. MEY. Preuss. Gatt. 258 (1839).

Cicercula, Navidura, Lastila, Graphiosa ALEF. Bonplandia. 126–139 (1861).

Baillon, *Hist. Pl.* II, 238; Benth. and Hook., *Gen. Pl.* I, 526; Durand, *Ind Gen. Phan.* 98; Schenck, *Palaeophyt.* 692.

Living species: 200 described; 120 distinct; temperate northern hemisphere and S. America. Russia, 21; Europe, 36; Russian Europe, 17; North America, 14; Mid. Calif., 10; S. Sts., 3; Canada, 4; Rocky mts., 4; E. Sts., 6; Pl. King, 3; Pl. Wheel., 5.

Fossil species: Germany; Pliocene (*Schenck*). Doubtful.

Lathyrus palustris LINN. Spec. 733 (1753).

L. polymorphus GRAY, Ive's Rep. 10 (1858?) *in part.*

L. lanszwertii KELL. Proc. Cal. Acad. II, 150 (1863 .

Wats. and Coult., Gray's Man. 6 ed. 144; Britt., Fl. N. J. 88; Upham, Fl. Minn. 47; Hook., Fl. Gt. Brit. 112; Trautv., Fl. Sib. 45; Coult., Fl. Colo. 73; Brew. and Wats., Fl. Calif. I, 159: Mac., Fl. Can. I, 122; Forbes and Hems., Fl. Sin. 186; Led., Fl. Ross. I, 686; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 42; Coult., Fl. Tex. 87; Roth., Wheel. Exp. 102; Wats., King Exp. 78, 419; Wats., Bibl. Ind. I, 230.

Europe; N. Asia; Siberia, Dahuria and China.

North America: Labrador, N. Br., Q., Ont. to Brit. Col.; S. to Washington, Oregon, Los Angeles, Calif. and W. Tex.; from Mont. to N. J.

Minn. valley: Forest district and to Pomme des Terres valley; moist woods, springs and bogs.

HERB.: *Taylor 610*, Minnesota lake; *Ballard 42*, Chaska; *Oestlund 34*, Hennepin Co.; *? Bailey 443*, Long lake; *? Bailey 66*, Vermilion lake; *Kassube 58*, Tuttle's creek, Hennepin Co.; *Sandberg 140*, Chisago Co.; *Holzinger 61*, Winona Co.; *Herrick 82*, Minneapolis; *Herb. Moyer 65*, Montevideo.

Lathyrus palustris LINN. var. **myrtifolius** (MUHL.) GRAY Pl. Fendl. 30 (1849).

L. myrtifolius MUHL. Willd. Spec. III, 1091 (1802).
L. stipulaceus TORR. Cat. N. Y. 92 (1819).
L. venosus var. *D.* T. and G. Fl. I, 274 (1838).
L. polyphyllus Wats. King. Exp. 78 (1871).
L. pubescens PORT. Fl. Colo. 32 (1874).

Wats. and Coult., Gray's Man. 6 ed. 144; Britt., Fl. N. J. 88; Coult., Fl. Colo. 73; Brew. and Wats., Fl. Calif. I, 159; Chap., Fl. S. St. 99; Mac., Fl. Can. I, 122; Wats., Bibl. Ind.I, 230.

North America: N. Br., Q. to Ont. and Minn.; S. to N. Car.; further range like that of type.

Minn. valley: Forest district to Blue Earth Co.; N. edge; swamps and damp woods.

HERB.: *Sandberg 141*, Wyoming.

Lathyrus glaucifolius BECK. Bot. 90 (1833).

L. pisiformis RICH. Frankl. Journ. 17 (1823).
L. ochroleucus HOOK. Fl. Bor.-Am. I, 159 (1833).
L. albidus EAT. Man. (1836).
Orobus ochroleucus A. BR. Ind. Sem. Berol. (1853).

Wats. and Coult., Gray's Man. 6 ed. 143; Britt., Fl. N. J. 89; Upham, Fl. Minn. 46; Mac., Fl. Can. I, 122; Wats., Bibl. Ind. I, 229.

North America: Ottawa to Coast range of Brit. Col., and N. on Mackenzie river within the Arctic circle; S. to N. Eng., N. J. and W. to Minn., Iowa and Man.

Minn. valley: Throughout; hillsides and shores of lakes and streams.

HERB.: *Ballard 597*, Prior's lake, Scott Co.; *Ballard 230*, Jordan, Scott Co.; *Sheldon 160*, Madison Lake; *Ballard 131*, Chaska; *Bailey 187*, Vermilion lake; *Kassube 57*, Minneapolis; *Herrick 81*, Minneapolis; *Arthur 63*, Vermilion lake; *Sandberg 139*, Goodhue Co.; *Herb. Wickersheim 33*, Ash lake, Lincoln Co.

Lathyrus venosus MUHL. Willd. Spec. III, 1092 (1802).

L. decaphyllus HOOK. Fl. Bor.-Am. I, 159 (1833).
Orobus venosus A. BR. Ind. Sem. Berol. (1853).
Lathyrus ochroleucus TORR. Wilkes Exp. 267 (1858).

Wats. and Coult., Gray's Man. 6 ed. 143; Britt., Fl. N. J. 88; Chap., Fl. S. St. 99; Coult., Fl. Colo., 73; Brew. and Wats., Fl. Calif. I, 159; Upham, Fl. Minn. 46; Mac., Fl. Can. I, 121; Roth., Wheel. Exp. 102; Cov., Fl. Ark. 176; Wats., Bibl. Ind. I, 231.

North America: L. Superior reg. to Pac. and N. lat. 52°; Washington, N. Calif. and Saskatchewan to Penn. and N. J.; S. in mts. to Colo. and Kan.; S. to Minn.; S. to Ga. and Miss. in Appallachians.

Minn. valley: Throughout; river banks and shores of lakes.

HERB.: *Sheldon 1292*, Lake Benton; *Ballard 593*, Prior's lake, Scott Co.; *Taylor 725,* Minnesota lake; *Sheldon 212,* Lake Ballentyne, Blue Earth Co.; *Sheldon 430,* Janesville; *Kassube 56,* Minneapolis; *Oestlund 33,* Hennepin Co.; *Herrick 80,* Minneapolis; *Bailey 186a,* Vermilion lake; *Sandberg 138,* Cannon Falls; *Herb. Moyer 64,* Montevideo.

APIOS MOENCH, Meth. 165 (1794).

Cyrtotropis WALL. Pl. As. Rar. I, 49 (1830).

Baillon, *Hist. Pl.* II, 249; Benth. and Hook., *Gen. Pl.* I, 532; Durand, *Ind. Gen. Phan.* 99.

Living species: 3; N. America, China and Himalayas; 1 in each region.

Fossil species: remains of the closely related *Glycine* Linn. distinguished in Tertiary of Kumi (*Unger*)*; see* Schenck *Palaeophyt.* 684.

Apios apios (LINN.) MACM. Torr. Bull. XIX, (1891).

Glycine apios LINN. Spec. 753 (1753).

Apios tuberosa MOENCH, Meth. 165 (1794).

Phaseolus tuberosus EAT. and WR. Man. 354 (1840).

Wats. and Coult., Gray's Man. 6 ed. 144; Britt., Fl. N. J. 89; Webb., Fl. Neb. 130; Chap., Fl. S. St. 105; Upham, Fl. Minn. 47; Mac., Fl. Can. I, 122; Coult., Fl. Tex. 87; Cov., Fl. Ark. 177; Wats., Bibl. Ind. I, 189.

North America: N. S., N. Br., Q., Ont. to N. Eng., N. J., Fla. and Miss.; W. to Minn., Dak., Neb., Kan., Ark. and W. Tex.

Minn. valley: Throughout; low woodland and borders of thickets.

HERB.: *Oestlund 35,* Hennepin Co.; *Sandberg 142,* Red Wing.

VICIA LINN. Gen. 587 (1737).

Ervum LINN. Gen. 588 (1737).

Abacosa, Atossa, Cujunia, Endusa, Hypecusa, Parallosa, Selunia, Swantia, Tuamina, Wiggersia ALEF. Bonplandia and O. Bot. Zsrt. (1858).

Coppolleria TODAR. Pl. Sic. I, 14 (1845).

Cracca RIVIN. T. 52 (1652).

Troilia LINK, ex Baillon, Hist. Pl. II, 198 (1870).

Ervum and **Faba** TOURN. Inst. (1700).

Orobella PRESL, Diss. (1832).

Oxypogon RAF. ex Baillon, Hist. Pl. II, 198 (1870).

Vicilla SCHUR. ex Baillon, Hist. Pl. II, 198 (1870).

Vicioides MOENCH, Meth. 131 (1794).

Baillon, *Hist. Pl.* II, 237; Benth. and Hook., *Gen. Pl.* I, 524; Durand, *Ind. Gen. Phan.* 97; Schenck, *Palaeophyt.* 678.

Living species: 200 described; 100–150 reduced; temperate northern hemisphere and South America; Russia, 45; Europe, 61; Russian Europe, 22; North America, 10-12; Mid. Calif., 6; Canada, 6; S. Sts., 7; Rocky mts., 3; E. Sts., 3; W. Tex., 5; Pl. King., 1; Pl. Wheel., 1.

Fossil species: *Ervites, (Saporta)* Tertiary of Aix. Lower Oligocene.

Vicia americana MUHL. Willd. Spec. III, 1096 (1802).

Orobus diffusus NUTT. Fras. Cat. (1813).
Vicia sylvatica NUTT. Gen. II, 97 (1818).
V. tridentata SCHW. Appx. Long. Exp. 116 (1825).
V. sparsifolia and *oregana* NUTT. T. and G. Fl. I, 270 (1838).

Wats. and Coult., Gray's Man. 6 ed. 143; Britt., Fl. N. J. 88; Webb., Fl. Neb. 130; Coult., Fl. Colo. 72; Upham, Fl. Minn. 46; Brew. and Wats., Fl. Calif. I, 157; Mac., Fl. Can. I, 121, 512; Greene, Fl. Fran. 3; Wats., King Exp. 78; Roth., Wheel. Exp. 162 *in var.*; Cov., Fl. Ark. 176; Wats., Bibl. Ind. I, 267.

North America: N. Br., Niagara river, N. of Lake Superior, Brit. Col. to Pac. and Alaska; S. to Washington, Oregon, Calif. and N. Mexico; E. to Minn., Ark., Kan., Neb., Ind., N. Y. and N. J.

Minn. valley: Forest district and W. to Chippewa valley; moist woods and banks.

HERB.: *Ballard 780,* Swan lake, Carver Co.; *Ballard 472,* Prior's lake, Scott Co.; *Ballard 631,* Chaska, Carver Co.; *Ballard 363,* Helena, Scott Co.; *Ballard 215,* Jordan, Scott Co.; *Ballard 109,* Carver; *Ballard 690,* Waconia; *Taylor 676,* Minnesota lake; *Taylor 270,* Janesville; *Taylor 69,* Elysian; *Sheldon 150,* Madison Lake; *Holzinger 59,* Winona Co.; *Holzinger 60,* Winona; *Herrick 79,* Minneapolis; *Hammond 14,* Lake City; *Herb. Sheld. 1899,* Minneapolis; *Herb. Moyer 63,* Black Oak lake, Chippewa Co.

Vicia caroliniana WALT. Fl. Car. 182 (1788).

V. parviflora MICHX. Fl. N. Am. II, 60 (1803).
Cracca caroliniana ALEF. Bonplandia IX, 124 (1861).

Wats. and Coult., Gray's Man. 6 ed. 143; Britt. Fl. N. J. 88; Chap., Fl. S. St. 98; Upham, Fl. Minn. 46; Mac., Fl. Can. I, 120, 512; Cov., Fl. Ark. 176; Wats., Bibl. Ind. I, 268.

North America: Ont. to N. Y. and N. J.; S. to Ga.; W. to Minn., Kan. and Ark.

Minn. valley: N. E. district and probably to Blue Earth Co.; edges of woods and river banks.

HERB.; ?*Kassube 55,* Minnehaha; *Herb. Sheld. 1898,* Minneapolis.

Vicia cracca LINN. Spec. 735 (1753).

Ervum cracca TRAUTV. Fl. Sib. 46 Act. Hort. Petr. V, 1, (1877).

Wats. and Coult., Gray's Man. 6 ed. 143; Britt., Fl. N. J. 88; Upham, Fl. Minn. 46; Hook., Fl. Gt. Brit. 107; Mac., Fl. Can. I, 120; Forbes and Hems., Fl. Sin. 184; Led., Fl. Ross. I, 674; Nym., Fl. Eur.; Miyabe, Fl. Kur. 225; Herd., Fl. Eur. Russ. 42; Wats., Bibl. Ind. I, 268: Hart., Fl. Scand. I, 299.

Arctic Europe; N. and W. Asia; China; N. Africa; Kurile Isls.

North America: Newf. and Greenland; N. S., N. Br., Ont. to N. J.; W. to Minn., Iowa and Ky.

Minn. valley: Reported from N. E. district and E. edge; rare; edges of woods.

LESPEDEZA MICHX. Fl. Bor.-Am. II, 70 (1803).
Oxyramphis WALL. Cat. 5348 (1828).
Campylotropis BUNGE, Ann. Sci. Nat. Ser. 2, VI, 57 (1836).
Phlebesporium JUNGH. Reise 346, Flora, 508 (1847).

Baillon, *Hist. Pl.* II, 318; Benth. and Hook., *Gen. Pl.* I, 524: Durand, *Ind. Gen. Phan.* 97.

Living species: 35±; N. America, temperate Asia and tropical Australian, mts. Russia, 3; North America, 8–10; E. Sts., 8; S. Sts., 5; Canada, 4; W. Tex, 2.

Lespedeza leptostachya ENGELM. Gray, Proc. Am. Acad. XII, 57 (1876).

Wats. and Coult., Gray's Man. 6 ed. 142, Upham, Fl. Minn. 46; Wats., Bibl. Ind. I, 232.

North America: Ills., Iowa and Minn.

Minn. valley: Reported from S. edge; no Minn. specimens seen.

Lespedeza frutescens (WILLD.) ELL. Sk. II, 206 (1824).
? *Hedysarum umbellatum* WALT. Fl. Car. 184 (1788).
H. frutescens WILLD. Spec. III, 1193 (1802).
Lespedeza capitata MICHX. Fl. Am. II, 71 (1803).
L. fruticosa PERS. Syn. II, 318 (1807).

Wats. and Coult., Gray's Man. 6 ed. 142; Upham, Fl. Minn. 46; Britt., Fl. N. J. 87; Webb., Fl. Neb. 130; Chap., Fl. S. St. 101; Mac., Fl. Can. I, 120, 511; Cov., Fl. Ark. 176; Wats., Bibl. Ind. I, 232.

North America: Ont. and N. Eng. to N. J., Fla., Miss. and La.; W. to Minn., Neb., Mo. and Ark.

Minn. valley: Forest district to New Ulm and Dak. line; dry and sandy places and shores of lakes.

HERB.: *Taylor 585,* Minnesota lake; *Sheldon 1203,* New Ulm; *Sheldon 1501,* Lake Benton; *Sandberg 137,* Cannon Falls.

Lespedeza hirta (LINN.) ELL. Sk. II, 207 (1824).
Hedysarum hirtum LINN. Spec. 748 (1753).
L. polystacha MICHX. Fl. Am. II, 71 (1803).
Hallia hirta POIR. Suppl. III, 3 (1813).

Wats. and Coult., Gray's Man. 6 ed. 141; Britt., Fl. N. J. 86; Upham, Fl. Minn. 46; Chap., Fl S. St. 101; Mac., Fl. Can. I, 119; Wats., Bibl. Ind. I, 232.

North America: Ont. to Mass., N. J., Fla. and Miss ; W. to Minn.

Minn. valley: Reported from S. W. and S. central districts; wooded hillsides and sunny banks.

Lespedeza reticulata (MUHL.) PERS. Syn. II, 318 (1807).

Hedysarum violaceum LINN. Spec. 749 (1753) *in part.*
H. reticulatum MUHL. Willd.-Spec. III, 1194 (1802).
Lespedeza sessiliflora MICHX. Fl. N. Am. II, 70 (1803) *in part.*
L. violacea var. *sessiliflora* DON, Mill. II, 307 (1832).
? L. stuvei var. *intermedia* S. WATS. Wats and Coult., Gray's Man. 6 ed. 141 (1890) *in part.*

Upham, Fl. Minn. 46; Chap., Fl. S. St. 101; Britt., Fl. N. J. 86; Mac., Fl. Can. I, 119, 511; Coult. Fl. Tex. 86; Cov., Fl. Ark. 176; Wats., Bibl. Ind. I, 233.

North America: Ont. and Mass. to Ill., Kan. and Tex?; W. to Minn. and Ark.

Minn. valley: Reported from S. central district; dry woods and edges of thickets.

Lespedeza reticulata (MUHL.) PERS. var. **virginica** (LINN.).

Medicago virginica LINN. Spec. 778 (1753).
Hedysarum junceum WALT. Fl. Car. 185 (1788).
H. reticulatum MUHL. Willd. Spec. III, 1194 (1802) *in part.*
Lespedeza sessiliflora MICHX. Fl. Am. II, 70 (1803) *in part.*
Hallia juncea POIR. Suppl. III, 3, (1813).
Lespedeza frutescens DC. Prodr. II, 349 (1825).
L. angustifolia HOOK. Bot. Mag. I, 23 (1835).
L. violacea var. *angustifolia* MAXIM. Syn. 366 (1837 ?).
L. reticulata WATS. and COULT. Gray's Man. 6 ed. 141 (1890) *in part.*

Britt., Fl, N. J. 86; Upham, Fl. Minn. 46; Chap., Fl. S. St. 101; Mac., Fl. Can. I, 119?; Wats., Bibl. Ind. I, 233.

North America: Mass. to Minn.; S. to Fla. and La.

Minn. valley: Reported from S. W. and S. central districts; dry woods and thickets.

Lespedeza violacea (LINN.) PERS. Syn. II, 318 (1807).

Hedysarum violaceum LINN. Spec. 749 (1753) *in part.*
H. frutescens LINN. Spec. 749 (1753).
Aeschynomene frutescens POIR. Enc. Meth. IV, 451 (1797).
Lespedeza divergens PURSH, Fl. Am. 481 (1814).

Wats. and Coult., Gray's Man. 6 ed. 141; Upham, Fl. Minn. 46; Britt., Fl. N. J. 86; Chap., Fl. S. St. 100; Cov., Fl. Ark. 176; Wats., Bibl. Ind. I, 233.

North America: N. Eng. and N. J. to Fla., Miss. and La.; W. to Minn Kan. and Ark.

Minn. valley: Reported from S. central districts; thickets and copses.

Lespedeza repens (LINN.) BART. Prodr. Fl. Phil. II, 77 (1815).

Hedysarum repens LINN. Spec. 749 (1753).
H. prostratum MUHL. Willd. Spec. III, 1200 (1802).
Lespedeza procumbens MICHX. Fl. N. Am. II, 70 (1803).
Hedysarum lespedeza POIR. Enc. Meth. VI, 415 (1804).
Lespedeza prostrata PURSH, Fl. Am. 481 (1814).

Wats. and Coult., Gray's Man. 6 ed. 141; Britt., Fl. N. J. 86; Upham, Fl. Minn. 46; Chap. Fl. S. St. 100; Mac., Fl. Can. I, 119; Coult., Fl. Tex. 86; Cov., Fl. Ark. 176: Wats.. Bibl. Ind. I, 232.

North America: Ont., N. Y. and N. Eng. to N. J., Fla. and Miss.; W. to Minn, Ark. and Tex.

Minn. valley: Reported from S. E. district; no Minn. specimens seen; sandy banks and roadsides.

PLEUROLOBUS ST. HIL. ex Kuntze, (1812).

Desmodium DESVX. ex Kuntze, (1813).
Dendrolobium BENTH. Pl. Jungh. I, 215 (1855).
Phyllodium DESVX. Journ. Bot. I, 123 (1813).
Dicerma DC. Mem. Leg. 326 (1825) *p. p.*
Pteroloma BENTH. Pl. Jungh. I, 219 (1855).
Catenaria BENTH. Jungh. I, 220 (1855).
Ototropis NEES, Vrat. Sem. (1838).
Dollinera ENDL. Gen. 1285 (1840).
Cyclomorium WALP. Rep. II, 890 (1843).
Nicolsonia DC. Mem. Leg. 311 (1825).
Perrottetia DC. Ann. Sci. Nat. Ser. 1, IV, 95 (1824).
Sagotia WALP. Linn. XXIII, 737 (1849).
Oxydium BENN. Pl. Jav. 156 (1838).
Codariocalyx HASSK. B b. Flora II, 48 (1842).

Baillon, *Hist. Pl.* II, 313; Benth. and Hook., *Gen. Pl.* I, 519; Durand, *Ind. Gen. Phan.* 96; O. Kuntze, *Rev. Gen.* I, 195.

Living species: 155±; N. and S. America; Africa; warmer Asia and Australasia. North America, 35; Canada, 10; E. Sts., 20; S. Sts., 20; Pl. Wheel., 6.

Pleurolobus canadensis (LINN.).

Hedysarum canadense LINN. Spec. 748 (1753).
H. scabrum MOENCH, Meth. 118 (1794).
Desmodium canadense DC. Prodr. II, 328 (1825).
Meibomia canadensis OK. Rev. Gen. I, 195 (1891).

Wats. and Coult., Gray's Man. 6 ed. 140; Britt., Fl. N. J. 85; Webb., Fl. Neb. 130; Chap., Fl. S. St. 103; Upham, Fl. Minn. 45; Mac., Fl. Can. I, 119; Cov., Fl. Ark. 175; Wats., Bibl. Ind. I, 215.

North America: N. Br., Q., Ont. to Man.; S. to N. J. and N. Car.; W. to Minn. and Neb.

Minn. valley: Throughout, forest districts and banks of streams; rare W. of Chippewa valley; dry woods and thickets.

HERB.: *Taylor 555*, Minnesota lake; *Ballard 533*, Cleary's lake, Scott Co.; *Sheldon 646*, Waseca; *Ballard 647*, Chaska; *Sheldon 1116*, Springfield; *Taylor 767*, Glenwood; *Ballard 787*, Swan lake, Carver Co.; *Taylor 768*, Glenwood; *Sheldon 1321*, Lake Benton; *Sheldon 1110*, New Ulm; *Ballard 459*, Prior's lake, Scott Co.; *Taylor 722*, Minnesota lake; *Sheldon 772*, Sleepy Eye; *Oestlund 32*, Hennepin Co.; *Sandberg 136*, Goodhue Co.; *Herrick 78*, Minneapolis; *Herb. Moyer 62*, Montevideo.

Pleurolobus paniculatus (LINN.).

Hedysarum paniculatum LINN. Spec. 748 (1753).
Desmodium paniculatum DC. Prodr. II, 329 (1825).
Meibomia paniculata OK. Rev. Gen. I, 198 (1891).

Wats. and Coult., Gray's Man. 6 ed. 140; Britt., Fl. N. J. 85; Webb., Fl. Neb. 130; Upham, Fl. Minn. 45; Chap., Fl. S. St. 103; Mac., Fl. Can. I, 119; Coult., Fl. Tex. 85; Cov., Fl. Ark. 176; Wats., Bibl. Ind. I, 217.

North America: Ont., N. Eng., N. J. to Fla. and Miss.; W. to Minn., Neb., Dak., Ark. and Tex.

Minn. valley: S. E. districts and Ft. Snelling; thickets and edges of forests; rare.

HERB.: *Holzinger 58*, Winona Co.

Pleurolobus dillenii (DARL.).

Desmodium dillenii DARL. Fl. Cestr. 414 (1827).
Hedysarum marylandicum WILLD. Spec. III, 1189 (1802) *not Linn.*
Desmodium marylandicum DC. Prodr. II, 328 (1825).
D. boottii TORR. Curt. Enum. Wilm. (1834).
Meibomia dillenii OK. Rev. Gen. I, 195 (1891).

Wats. and Coult., Gray's Man. 6 ed. 140; Webb., Fl. Neb. 130; Britt., Fl. N. J. 85; Chap., Fl. S. St. 103; Upham, Fl. Minn. 45; Mac., Fl. Can. I, 118; Cov., Fl. Ark. 176; Wats., Bibl. Ind. I, 216.

North America: Ont. to N. Eng., N. J. and Fla.; W. to Minn., Neb. and Ark.

Minn. valley: N. edge of valley and infrequent; forest openings and edges of thickets.

HERB.: ? *Kassube 54*, Minneapolis.

Pleurolobus canescens (LINN.).

Hedysarum canescens LINN. Spec. 748 (1753) *part.*
H. viridiflorum WILLD. Spec. III, 1192 (1802).
H. scaberrimum ELL. Sk. II, 217 (1824).
Desmodium canescens DC. Prodr. II, 328 (1825).
D. viridiflorum DC. Prodr. II, 329 (1825) *excl. syn.*
D. aikinianum BECK, Bot. 84 (1833).

Hedysarum aikinii EATON, Man. ed. VII, 325 (1836).
Meibomia canescens OK. Rev. Gen. I, 195 (1891).

Wats. and Coult., Gray's Man. 6 ed. 139; Britt., Fl. N. J. 84; Webb., Fl. Neb. 130; Chap., Fl. S. St., 102; Upham, Fl. Minn. 45; Mac., Fl. Can. I, 118; II, 317; Cov., Fl. Ark. 175; Wats., Bibl. Ind. I, 215.

North America: Ont. to Mass. and Vt.; S. to N. J., Fla. and Miss.; W. to Minn., Neb. and Ark.

Minn. valley: Forest district to Nicollet Co. and New Ulm; infrequent; rich woods and damp edges of meadows.

HERB.: *Ballard 696,* Waconia; *Ballard 554,* Spring lake, Scott Co.; *Sandberg 135,* Cannon Falls.

Pleurolobus grandiflorus (WALT.).

Hedysarum grandiflorum WALT. Fl. Car. 185 (1788).
H. glutinosum WILLD. Spec. III, 1198 (1802).
H. acuminatum MICHX. Fl. Am. II, 72 (1803).
Desmodium acuminatum DC. Prodr. II, 329 (1825).
D. grandiflorum DC. Prodr. II, 338 (1825).
Meibomia grandiflora OK. Rev. Gen. I, 196 (1891).

Wats. and Coult., Gray's Man. 6 ed. 139; Webb., Fl. Neb. 130; Britt., Fl. N. J. 84; Upham, Fl. Minn. 45; Chap., Fl. S. St. 102; Mac., Fl. Can. I, 118; Cov., Fl. Ark. 176; Wats., Bibl. Ind. I, 215.

North America: Q., Ont., N. Eng., N. J. to Fla., Miss. and Alab.; W. to Minn., Neb., Ark. and Tex.

Minn. valley: Forest district and banks of streams to Chippewa valley; moist woods and near lakes.

HERB.: *Ballard 770,* Swan lake, Carver Co.; *Ballard 74,* Chaska; *Ballard 685,* Waconia; *Taylor 807,* Glenwood; *Taylor 611,* Minnesota lake; *Sheldon 889,* Sleepy Eye; *Ballard 393,* Jordan, Scott Co.; *Ballard 595,* Prior's lake, Scott Co.; *Ballard 686,* Waconia; *Ballard 352,* Helena, Scott Co.; *Ballard 473,* Prior's lake, Scott Co; *Leonard 13,* Spring Valley; *Herrick 77,* Minneapolis; *Oestlund 31,* Hennepin Co., *Sandberg 134,* Cannon Falls; *Herb. Sheld. 1747,* Minneapolis.

Pleurolobus nudiflorus (LINN.).

Hedysarum nudiflorum LINN. Spec. 749 (1753).
Desmodium nudiflorum DC. Prodr. II, 330 (1825).
Meibomia nudiflora OK. Rev. Gen. I, 197 (1891).

Wats. and Coult., Gray's Man. 6 ed. 138; Britt., Fl. N. J. 84; Upham, Fl. Minn. 45; Chap., Fl. S. St. 102; Mac, Fl. Can. I, 118; Cov., Fl. Ark. 176; Wats., Bibl. Ind. I, 217.

North America: Q., Ont., N. Eng., N. J. to Fla. and Miss.; W. to Minn. and Ark.

Minn. valley: Reported from S. central district; dry banks and woods.

GLYCYRRHIZA LINN. Gen. Corr. 973 (1737).

Liquiritia MOENCH, Meth. 152 (1794).
Clidanthera R. BR. App. Sturt. Exp. 10 (1820?)
Meristotrophis F. and M. Ind. Sem. Petrop. IX, 25 (1842).
Glycyrrhizopsis BOISS. Diagn. Or. Ser. 2, V, 82 (1860?).

Baillon, *Hist. Pl.* II, 282; Benth. and Hook., *Gen. Pl.* I, 508; Durand, *Ind. Gen. Phan.* 95; Schenck, *Palaeophyt.* 680.

Living species: 12; temperate and subtropical Asia; Mediterranean region; W. N. and S. America; Australia. Russia, 5; Russian Europe, 3; North America, 2; E. Sts., 1; Calif., 1; centers around the Mediterranean.

Fossil species: 1–2; Europe, Tertiary (*Heer*, *Unger*).

Glycyrrhiza lepidota (NUTT.) PURSH, Fl. Am. 480 (1814).

Liquiritia lepidota NUTT. Fras. Cat. (1813).
Glycyrrhiza glabra TORR. Em. Rep. 408 (1858).

Wats. and Coult., Gray's Man. 6 ed. 137; Coult., Fl. Colo. 59; Webb., Fl. Neb. 130; Upham, Fl. Minn. 45; Brew. and Wats., Fl. Calif. I, 143; Mac., Fl. Can. I, 109; Coult., Fl. Tex. 84; Wats., King Exp. 78; Roth., Wheel. Exp. 98; Cov., Fl. Ark. 175; Wats., Bibl. Ind. I, 222.

North America: Lake Erie reg. of Can. to Saskatchewan, Assiniboia and Rockies; N. to Hudson Bay; S. to Washington, Calif. and Neb.; in mts. to N. Mexico; E. to Tex., Colo., Neb., Iowa, Mo., Ark. and Minn.

Minn. valley: Throughout; especially in prairie districts; sandy shores of lakes and high prairies.

HERB.: *Taylor 684*, Minnesota lake; *Sheldon 1272*, Lake Benton; *Sheldon 773*, Sleepy Eye; *Taylor 1120*, Glenwood; *Taylor 775*, Glenwood; *Sheldon 1453*, Pipestone City; *Herrick 76*, Minneapolis; *Kassube 53*, Minneapolis; *herb. Moyer 60*, Montevideo.

SPIESIA NECK. Elem. 1311 (1790).

Oxytropis DC. Astrag. 24, 66 (1802).

Baillon, *Hist. Pl.* II, 281; Benth. and Hook., *Gen. Pl.* I, 507; Durand, *Ind. Gen. Phan.* 95; O. Kuntze, *Rev. Gen.* I, 205.

Living species: 200±; Europe; Asia; North America; mountainous and colder regions. Russia, 75; Europe, 12; Russian Europe, 11; North America, 14; Canada, 12–13; Rocky mts., 11–12; E. Sts., 3; Pl. King, 1; Pl. Wheel., 5; W. Tex., 1.

Spiesia splendens (DOUGL.) O. KUNTZE, Rev. Gen. Pl. I, 207 (1891).

Oxytropis splendens DOUGL. Hook. Fl. Bor.-Am. I, 147 (1833).

Wats. and Coult., Gray's Man. 6 ed. 137; Coult., Fl. Colo. 70; Upham, Fl. Minn. 45; Mac., Fl. Can. I, 116, 510; Roth., Wheel. Exp. 97; Wats., King Exp. 447; Wats., Bibl. Ind. I, 246.

North America; Red valley to N. W. T. and 51° N. lat.; Saskatchewan and W. Minn. to Rocky mts. and N. Tex.

Minn. valley: Reported from Chippewa river and Glenwood; W. to Dakota line; high bluffs and prairies.

Spiesia lamberti (PURSH) O. KUNTZE, Rev. Gen. Pl. I, 207 (1891).

Oxytropis lamberti PURSH, Fl. Am 740 (1814).
Astragalus lamberti POIR. Suppl. V, 564 (1817).
Oxytropis hookeriana NUTT. T. and G. Fl. I, 340 (1838).

Wats. and Coult., Gray's Man. 6 ed. 137; Webb., Fl. Neb. 130; Coult., Fl. Colo, 71; Upham, Fl. Minn. 44; Mac., Fl. Can. I, 116; Coult., Fl. Tex. 84; Roth., Wheel. Exp. 42, 97; Wats., King Exp. 447; Wats., Bibl. Ind. I, 245.

North America: Red valley and N. W. T. to Alaska; Saskatchewan, Minn., N. Mex. and Tex.; W. to Rocky mts.

Minn. valley: Prairie district, E. to New Ulm; high, bare bluffs and prairies.

HERB.: *Sheldon 1337,* Lake Benton; *Sheldon 1389,* Verdi, Lincoln Co.; *Taylor 832*, Glenwood; *Taylor 873,* Glenwood; *Roberts 25,* Hancock; *Leiberg 16,* Rock Co.; *Herb. Wickersheim 32,* Idlewild, Lincoln Co.

ASTRAGALUS LINN. Gen. 570 (1737).

Phaca LINN Gen. Corr. 972 (1737).
Homolobus and **Kentrophyta** NUTT. T. and G. Fl. N. Am. I, 350, 353 (1838).
Diplotheca HOCHST, Flora 595 (1846).
Aulosema WALP. Rep. I, 694 (1842).
Podolotus ROYLE, Ill. Him. 198 (1839).
Tragacantha TOURN. Inst. 417 (1700).
Erophaca BOISS. Voy. Bot. 176 (1839).

Baillon, *Hist. Pl.* II, 280; Benth. and Hook., *Gen. Pl.* I, 506; Durand, *Ind. Gen. Phan.* 94; O. Kuntze, *Rev. Gen.* I, 210.

Living species: 1300 described; 900± distinct. Center in Russian Asia, Himalayas and the Orient; Europe, North and South America, S. E. Africa (1 sp.); wanting in Australia and Cape of Good Hope region. Especially in northern hemisphere; Russia, 175; Europe, 125; Russian Europe, 52; North America, 150+; Mid. Calif., 36; W. Tex., 19; all Calif., 50±; Canada, 42; E. Sts., 16; S. Sts., 6; Rocky mts., 66; Pl. King, 40; Pl. Wheel., 30.

Astragalus lotiflorus HOOK. Fl. Bor.-Am. I, 152 (1833).

Phaca lotiflora T. and G. Fl. I, 349 (1838).

Wats. and Coult., Gray's Man. 6 ed. 136; Wats., King Exp. 439; Roth., Wheel. Exp. 36; Wats., Bibl. Ind. I, 196; Webb., Fl. Neb 131; Coult., Fl. Colo. 63; Mac., Fl. Can. I, 112.

North America: Saskatchewan and Brit. Col. to Minn., Dak., Wyoming, Neb., Kan., Ind. Terr. and Tex.

Minn. valley: Local near mouth of Chippewa; high plains or knolls.

HERB.: *Moyer 257,* Montevideo; *Herb. Moyer 258,* Montevideo.

Astragalus flexuosus DOUGL. Hook. Fl. N. Am. I. 140 (1833).

Phaca flexuosa HOOK. Fl. N. Am. I, 140 (1833).
P. elongata HOOK. l. c. (1833).

Wats. and Coult., Gray's Man. 6 ed. 137; Mac., Fl. Can. I, 113; Wats., King Exp. 443; Wats., Bibl. Ind. I, 193; Upham, Fl. Minn. 44; Webb., Fl. Neb. 131; Coult., Fl. Colo. 67.

North America: Saskatchewan, Brit. Col., N. W. T., Assiniboia and lat. 50°N. to Minn., Dak., Neb. and Wyoming.

Minn. valley: Local near mouth of Chippewa; probably rare along W. edge; prairies.

HERB.: *Moyer 254,* Montevideo; *Herb. Moyer. 255,* Montevideo.

Astragalus hypoglottis LINN. Mant. II, 274 (1771).

A. agrestis DOUGL. Hook. Fl.? (1833).
A. goniatus NUTT. T. and G. Fl. I, 330 (1838).
Phaca hypoglottis MACM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 135; Wats., King Exp. 68, 436; Roth., Fl. Alask. 445; Wats., Bibl. Ind. I, 195; Led., Fl. Ross. I, 602; Mac., Fl. Can. I, 111; Webb., Fl. Neb. 131; Upham, Fl. Minn. 44; Coult., Fl. Colo. 61.

Siberia and Kamtschatka.

North America: Hudson Bay and Alaska to S. Colo. and Neb.

Minn. valley: Chippewa valley, Glenwood to Montevideo and probably along W. edge; prairies.

HERB.: *Taylor 743,* Glenwood; *Moyer 252,* Montevideo; *Herb. Moyer 253,* Montevideo.

Astragalus adsurgens PALL. Astrag. 40 (1800).

A. laxmanni NUTT. Gen. II, 99 (1818).
A. striatus NUTT. in T. and G. Fl. I, 330 (1838).

Wats. and Coult., Gray's Man., 6 ed. 135; Upham, Fl. Minn. 44; Webb., Fl. Neb. 131; Mac., Fl. Can. I, 110; Led., Fl. Ross. I, 603; Wats., King. Exp. 68, 439; Roth., Wheel. Exp. 36; Coult., Fl. Colo. 61.

Siberia and Kamtschatka.

North America: Nelson river, lat. 56° N., Saskatchewan and Assiniboia to Minn., Neb., Brit. Colo. and Oregon.

Minn. valley: W. districts and E. to Chippewa valley; prairies and dry sunny banks.

HERB.: *Taylor 872*, Glenwood; *Sheldon 1381*, Lake Benton; *Taylor 743*, Glenwood; *Moyer 1*, Montevideo; ?*Moyer 2*, Montevideo; *Holzinger 298*, Hancock.

Astragalus parviflorus (PURSH).

Dalea parviflorus PURSH, Fl. Am. 474 (1814).
Psoralea parviflora POIR. Suppl. IV, 590 (1816).
Astragalus gracilis NUTT. Gen. II, 100 (1818).
Phaca parviflora NUTT. T. and G. Fl· I, 348 (1838).
P. gracilis MACM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 136; Webb., Fl. Neb. 131; Coult., Fl. Colo. 62; Upham, Fl. Minn. 44; Wats., King Exp. 438; Roth., Wheel Exp. 94; Wats., Bibl. Ind. I, 194.

North America: Colo. to Neb., Mo. and Minn.

Minn. valley: Reported from the S. W. district; prairies.

Astragalus canadensis LINN. Spec. 757 (1753).

A. carolinianus LINN. Spec. 757 (1753).
Phaca canadensis MACM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 135; Coult., Fl. Colo. 61; Webb., Fl. Neb. 131; Upham, Fl Minn. 43; Chap., Fl. S. St. 97; Mac., Fl. Can. I, 110, 507; Wats., King Exp. 67, 68, 436; Roth., Wheel. Exp. 93; Cov., Fl. Ark. 175; Wats., Bibl. Ind. I, 191.

North America, Q., Ont., Hudson Bay and Rocky mts. to N. Y., Ga. and Fla.; W. to headwaters of the Columbia river and the Saskatchewan; S. in mts. to Gt. Basin region; through Colo., Minn., Neb., Kan. and Ark.

Minn. valley: Throughout; river banks, lake shores and sandy prairies.

HERB.: *Taylor 685*, Minnesota lake; *Taylor 751*, Minnesota lake; *Ballard 488*, Prior's lake, Scott Co.; *Sheldon 1587*, Lake Benton; *Taylor 912*, Glenwood; *Ballard 767*, Waconia; *Kassube 52*, Minneapolis; *Herrick 75*, Minneapolis; *Sandberg 133*, Goodhue Co.; *Holzinger 56*, Winona Co.; *Holzinger 57*, Winona Co.; *Herb. Sheld. 1746*, Minneapolis; *Herb. Moyer 59*, Montevideo; *Pomeroy 2*, Hennepin Co.; *Holtz 15*, Hennepin Co.

Astragalus plattensis NUTT. T. and G. Fl. I, 332 (1838).

A. mexicanus GRAY, Pl. LINDH. 176 (1845).
A. tennesseensis GRAY, Chap. Fl. S. St. 98 (1860).
A. plattensis var. *tennesseensis* GRAY, Proc. Am. Acad. VI, 193 (1863).
Phaca plattensis MACM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 135; Webb., Fl. Neb. 131; Coult., Fl. Colo. 60; Chap., Fl. S. St. 98; Upham, Fl. Minn. 43; Coult., Fl. Tex. 82; Wats., King. Exp. 435; Wats., Bibl. Ind. I, 199.

North America: Minn. and Dak. to Colo., Neb., Ill., Alab. and N. Mex.

Minn. valley: Reported from S. W. district; prairies.

Astragalus caryocarpus KER. Bot. Reg. II, 176 (1816).

A. crassicarpus NUTT. Fras. Cat. (1813).
A. carnosus PURSH, Fl. Am. 740 (1814).
A. succulentus RICH. Frankl. Journ. 18 (1823).
A. pachycarpus T. and G. Fl. I, 332 (1838).
Phaca caryocarpa MACM. MSS. (1891).

Wats., and Coult., Gray's Man. 6 ed. 135; Coult., Fl. Colo. 60; Webb., Fl. Neb. 131; Upham, Fl. Minn. 43; Mac., Fl. Can. I, 110; Coult., Fl. Tex. 82; Wats., King Exp. 435; Roth., Wheel. Exp. 93; Cov., Fl. Ark. 175; Wats., Bibl. Ind. I, 191.

North America: Saskatchewan valley to S. W. Tex.; from Colo. to Minn., Neb. and Iowa; prairies.

Minn. valley: Throughout, prairies and forest openings.

HERB.: *Ballard 341*, Jordan, Scott Co.; *Sheldon 1608*, Minneapolis: *Kassube 51*, Minneapolis; *Ankeny 1*, Minneapolis; *Sandberg 132*, Red Wing; *Herb. Sheld. 1897*, Minneapolis; *Herb. Wickersheim 31*, Idlewild, Lincoln Co.; *Herb. Moyer 58*, Montevideo; *Clark 1*, Hennepin Co.; *Seward 1*, Hennepin Co.; *Pomeroy 1*, Hennepin Co.; *Cross 1*, Hennepin Co.

AMORPHA LINN. Gen. 604 (1737).

Bonafidia NECK. Elem. 1364 (1790).

Baillon, *Hist. Pl.* II, 287; Benth. and Hook., *Gen. Pl.* I, 492; Durand, *Ind. Gen. Phan.* 92; Schenck, *Palaeophyt.* 680.

Living species: 8; North America especially in southwest. 1 sp. introd. in Russia. Canada, 3; W. Tex., 3; Mid. Calif., 2; E. Sts., 3; Rocky mts., 3; S. Sts., 3; Pl. Wheel., 2.

Fossil species: European Tertiary 1, doubtful (*Unger*).

Amorpha canescens NUTT. Fras. Cat. (1813).

Wats. and Coult., Gray's Man. 6 ed. 131; Coult., Fl. Colo. 59; Webb., Fl. Neb. 132; Upham, Fl. Minn 43; Chap., Fl. S. St., 94; Mac., Fl.Can. I, 108, 506; Cov., Fl. Ark. 174; Wats., Bibl. Ind. I, 187.

North America: Man. and Red river reg. to 60° N. lat.; S. to Minn., Colo., Ark. and Tex. E. to Ind. and Ga.

Minn. valley: Throughout; prairies and higher levels; especially abundant in prairie district.

HERB.: *Taylor 686*, Minnesota lake; *Sheldon 531*, Waseca; *Sheldon 670*, Waseca; *Taylor 758*, Glenwood; *Ballard 256*, Jordan, Scott Co.; *Taylor 590*, Minnesota lake; *Sheldon 1103*, Springfield; *Winchell 4*, Minneapolis; *Kassube 50*, Minneapolis; *Holzinger 55*, Winona Co.; *Oestlund 30*, Minneapolis; *Herrick, 74*, Minneapolis; *Leonard 12*, Minneapolis; *Sandberg 130*, Goodhue Co.; *Sheldon 783*, Sleepy Eye; *Herb, Sheld. 1651*, Minneapolis; *Herb. Moyer 57*, Montevideo.

Amorpha microphylla Pursh, Fl. Am. 466 (1814).
A. nana Nutt. Gen. II, 91 (1818).

Wats. and Coult., Gray's Man. 6 ed. 131; Coult., Fl. Colo. 59; Upham, Fl. Minn. 43; Mac., Fl. Can. I, 109, 506; Wats., Bibl. Ind. I, 188.

North America: Assiniboia and Man. to lat. 50° N. on Red river; S. to Minn., Iowa and Rocky mts. Apparently absent or rare in Nebraska where it should be expected.

Minn. valley: Blue Earth Co. and W.; entire prairie district; particularly abundant in Chippewa and Cottonwood valleys; dry prairies and forest openings.

Herb.: *Sheldon 951*, Redwood Falls; *Sheldon 1085*, Springfield; *Herb. Moyer 61*, Montevideo; *MacM.* and *Sheld. 120*, Brainerd.

Amorpha fruticosa Linn. Spec. 713 (1753).

Wats. and Coult., Gray's Man. 6 ed. 132, Britt., Fl. N. J. 82; Webb., Fl. Neb. 132; Upham, Fl. Minn. 43; Coult., Fl. Colo. 59; Chap., Fl. S. St. 93; Mac., Fl. Can. I, 109; Herd., Fl. Russ. Eur. 44; Coult., Fl. Tex. 76; Roth., Wheel. Exp. 99; Cov., Fl. Ark. 174; Wats., Bibl. Ind. I, 187.

Introduced in European Russia.

North America: Man. to the Selkirks and N. on Red river to Hudson Bay; S. to Colo., Neb., Ark. and Tex.; E. to Penn., N. J., Fla. and Miss.

Minn. valley: Throughout; banks of streams and lakes.

Herb.: *Taylor 36*, Elysian; *Ballard 20*, Chaska; *Sheldon 58*, Elysian; *Kassube 49*, Minneapolis; *Sandberg 129*, Cannon Falls; *Sheldon 1450*, Pipestone; *Sheldon 1273*, Lake Benton; *Sheldon 220*, Madison Lake, Blue Earth Co.; *Herb. Wickersheim 30*, Ash lake, Lincoln Co.; *Herb. Moyer 56*, Montevideo.

Mr. E. P. Sheldon finds that the sectional division of *Amorpha*, on the basis of the number of seeds in the pod, given by Watson and Coulter does not hold good for Minn. valley specimens of *A. fruticosa* which are very frequently only one-seeded.

CRACCA Linn. Fl. Zeyl. 139 (1747).
Tephrosia Pers. Syn. II, 328 (1807).
Brissonia Neck. Elem. 1348 (1790).
Rienera Moench, Suppl. 44 (1802).
Xiphocarpus Presl, Symb. I, 13 (1832).
Kiesera Reinw. Syll. Ratisb. II, 11 (1823?).
Requienia DC. Ann. Sci. Nat. Ser. 1, IV. 91 (1824).
Apodynomene E. Mey. Comm. Pl. Afr. 111 (1837).
Pogonostigma Boiss. Diagn. Or. II, 39 (1843).
Catacline Edgew. Journ. Beng. Soc. XVI, 1214 (1847).

Balboa LIEBM. Vid. Medd. 106 (1856.)
Macronyx DALZ. Hook. Journ. Bot. II, 35 (1835).

Baillon, *Hist. Pl.* II, 264; Benth. and Hook., *Gen. Pl.* I, 496; Durand, *Ind. Gen. Phan.* 93; O. Kuntze, *Rev. Gen.* I, 173; Schenck, *Palaeophyt.* 680.

Living species: 125±; tropical and subtropical regions. Centers in S. Africa and Australia. North America, 11–13; S. Sts., 8; Canada, 2; E. Sts., 3; Pl. Wheel, 4; W. Tex., 1.

Fossil species: 1; Oeningen, Tertiary (*Heer*).

Cracca virginiana (LINN.) O. KUNTZE, Rev. Gen. Pl. I, 173 (1891).

Galega virginiana LINN. Spec. ed. 2, 1062 (1762).
Tephrosia virginiana PERS. Syn. II, 329 (1807).

Wats. and Coult., Gray's Man. 6 ed. 133; Britt., Fl. N. J. 82; Chap., Fl. S. St. 95; Upham, Fl. Minn. 43; Mac., Fl. Can. I, 507; Cov., Fl. Ark. 175; Wats., Bibl. Ind. I, 260.

North America: S. Ont. to Minn. and N. J.; S. to Fla., Miss. and Ark.

Minn. valley: Reported from S. E. edge; no Minnesota plants seen.

KUHNISTERA LAM. Enc. Meth. III, 370 (1789).

Petalostemon MICHX. Fl. Bor.-Am. II, 48 (1803).
(**Kuhnia**) WALT. Fl. Car. (1788).
Cylipogon RAF. Jour. Phys. LXXXIX, 97 (1819) *part.*
Gatesia BERTOL. Misc. VII, 30 (1846).

Baillon, *Hist. Pl.* II, 286; Benth. and Hook., *Gen. Pl.* I, 493; Durand, *Ind. Gen. Phan.* 92; O. Kuntze, *Rev. Gen.* I, 192.

Living species: 25±; North America and N. Mexico; S. Sts., 9; W. Tex., 8; E. Sts., 5; Canada, 2; Rocky mts., 4; Pl. Wheel., 2.

Kuhnistera villosa (NUTT.) O. KUNTZE, Rev. Gen. Pl. I, 192 (1891).

Petalostemon villosus NUTT. Gen. II, 85 (1818).
Dalea villosa SPRENG. Syst. III, 326 (1826).

Wats. and Coult., Gray's Man. 6 ed. 133; Coult., Fl. Colo. 59; Webb., Fl. Neb. 132; Upham, Fl. Minn. 43; Wats., Bibl. Ind. I, 248.

North America: Upper Missouri valley to Neb.; Upper Mississippi to Wisc., Minn. and Mo.

Minn. valley: E. districts to Chippewa valley and Lac Que Parle Co.; more abundant in N. E. and S. E.; dry plains.

HERB.: *Sheldon 1602,* Minneapolis; *Herrick 73,* Minneapolis; *Sandberg 128,* Cannon Falls.

Kuhnistera candida (WILLD.) O. KUNTZE, Rev. Gen. Pl. I, 192 (1891).

Dalea candida WILLD. Spec. III, 1337 (1802).
Petalostemon candidus MICHX. Fl. Am. II, 49 (1803).
Psoralea candida POIR. Enc. Meth. V, 694 (1804).
Petalostemon virgatum NEES, Pl. Neuwied 6 (1845?).

Wats. and Coult., Gray's Man. 6 ed. 133; Coult., Fl. Colo. 58; Webb., Fl. Neb. 132; Upham, Fl. Minn. 43; Mac., Fl. Can I, 109; Coult., Fl. Tex. 79; Roth., Wheel. Exp. 99; Cov., Fl. Ark. 174; Wats., Bibl. Ind. I, 247.

North America: With *K. purpurea* (Vent.).

Minn. valley: Throughout; dry prairies and forest openings and meadows.

HERB.: *Ballard 633*, Chaska; *Sheldon 1327*, Lake Benton; *Sheldon 1128*, Springfield; *Sheldon 738* Sigel township, Brown Co.; *Taylor 770*, Glenwood; *Oestlund 29*, Minneapolis; *Holzinger 54*, Winona Co.; *Leonard 11*, Minneapolis; *Kassube 48*, Minneapolis; *Herb. Moyer 55*, Montevideo.

Kuhnistera purpurea (VENT.).

Dalea purpurea VENT. Hort. Cels. 40 (1800).
D. violacea WILLD. Spec. III, 1337 (1802).
Petalostemon violaceus MICHX. Fl. Am. II, 50 (1803).
Psoralea purpurea POIR. Enc. Meth. V, 694 (1804).

Wats. and Coult., Gray's Man. 6 ed. 132; Coult., Fl. Colo. 58; Webb., Fl. Neb. 132; Upham, Fl. Minn. 42; Mac., Fl. Can. I, 109; and 507 in var.; Coult., Fl. Tex. 79; Cov., Fl. Ark. 175; Wats., Bibl. Ind. I, 249.

North America: Saskatchewan and N. W. T. to Tex.; W. to Colo. and E. to Indiana; prairies.

Minn. valley: Throughout; dry prairies and forest openings and meadows.

HERB.: *Taylor 688*, Minnesota lake; *Taylor 835*, Glenwood; *Taylor 183*, Janesville; *Sheldon 1127*, Springfield; *Sheldon 694*, Waseca; *Sheldon 972*, Sleepy Eye; *Taylor 559*, Minnesota lake; *Sheldon 1372*, Lake Benton—(a low form with globose heads)—; *Herrick 72*, Minneapolis; *Leonard 10*, Minneapolis; *Holzinger 53*, Winona Co; *Winchell 3*, Minneapolis; *Kassube 47*, Minneapolis; *Sandberg 127*, Cannon Falls; *Herb. Moyer 54*, Montevideo.

DALEA LINN. Gen. Appx. (1737).

Cylipogon RAF. ex Endl. Gen. 6523 (1840).
Parosella CAV. Elench. Hort. Matr. (1801).
Trichopodium PRESL, Bot. Bem. 52 (1844).

Baillon, *Hist. Pl.* II, 285; Benth. and Hook. *Gen. Pl.* I, 493; Durand, *Ind. Gen. Phan.* 92.

Living species: 110±; N., C. and S. America; especially in the tropics; Mexico and C. Amer. 50±; S. America, 12–16; N. America, 40±; W. Tex., 18; California, 11–15; Rocky mts., 7; S. Sts., 2; E. Sts., 4; Pl. King., 5; Pl. Wheel., 6

Dalea dalea (LINN.) MacM. Torr. Bull. XIX (1891).

Psoralea dalea LINN. Spec. 764 (1753).
Dalea alopecuroides and *cliffortiana* WILLD. Spec. III, 1336 (1803).
D. linnaei MICHX. Fl. N. Am. II, 57 (1803).
Psoralea alopecuroides POIR. Enc. Meth. V, 695 (1804).
Petalostemon alopecuroides PERS. Syn. II, 268 (1807).
Dalea pedunculata PURSH, Fl. Am. 474 (1814).

Wats. and Coult., Gray's Man. 6 ed. 132; Upham, Fl. Minn. 42; Webb., Fl. Neb. 132; Coult., Fl. Colo. 58; Chap., Fl. S. St. 93; Fl. Tex. 77; Roth., Wheel. Exp. 99; Cov., Fl. Ark. 174; Wats., Bibl. Ind. I, 211.

North America: Minn. and Dak. to Ill., Neb., Ark., Ala. and Tex.; W. to Rocky mts. from Mont. to S. Arizona and Pecos river valley.

Minn. valley: Minnesota lake, westward to Dak. line; rich soil along streams.

HERB.: *Sheldon 1455,* Lake Benton; *Taylor 714,* Minsota lake.

PSORALEA LINN. Gen. ed. II, 716 (1742).

Rhyncodium PRESL, Bot. Bem. 54 (1844).
Meladenia TURCZ. Bull. Mosc. I, 576 (1848).
Dorynchium MOENCH, Meth. 253 (1794).
Ruteria MOENCH, l. c. (1794).
Poikadenia ELL. Sk. II, 198 (1824).
Bipontinia ALEF. Jahresb. Pollich. (1866).
Munbya POMEL, ex Durand, Ind. Phan. (1888).
Lotodes SIEGESB. Fl. Petrop. 66 (1736).

Baillon, *Hist. Pl.* II, 284; Benth. and Hook., *Gen. Pl.* I. 491; Durand, *Ind. Gen. Phan.* 92.

Living species: 100+; 40, S. Africa; 30, N. America; 11, Australia; 6, S. America; 10, trop. and temp. Europe, Asia and N. Africa. (B. and H.); W. Tex., 8; Calif., 6–7; E. Sts., 10; Rocky mts. 8; S. Sts., 7; Pl. King., 1; Pl. Wheel., 2; Canada, 4; mid. Calif. 5.

Psoralea tenuiflora PURSH, Fl. Am. 475 (1814).

P. floribunda NUTT. T. and G. Fl. I, 300, 688 (1838).
Lotodes tenuiflora OK. Gen. I, (1891).

Wats. and Coult., Gray's Man. 6 ed. 131; Upham, Fl. Minn. 42; Webb., Fl. Neb. 132; Coult., Fl. Colo. 56; Fl. Tex. 75; Roth., Wheel. Exp. 98; Cov., Fl. Ark. 174; Wats., Bibl. Ind. I, 254.

North America: Upper Missouri valley to Tex. and Arizona; E. to Minn., Neb., Iowa, Kan., Ark, and Ill.

Minn. valley: Reported from prairies of Cottonwood Co. and along the Watonwan valley; hillsides and dry praries.

Psoralea esculenta PURSH, Fl. Am. 475 (1814).

P. brachiata DOUGL. Hook. Fl. Bor.-Am. I, 137 (1833).
Lotodes esculenta OK. Rev. Gen. I, (1891).

Wats. and Coult., Gray's Man. 6 ed. 131; Webb., Fl. Neb. 132; Upham, Fl. Minn. 42; Coult., Fl. Colo. 57; Mac., Fl. Can. I, 108; Coult., Fl. Tex. 75; Wats., Bibl. Ind. I, 253.

North America: Saskatchewan valley to Brazos and Rio Grande valleys; plains E. of Rocky mts.

Minn. valley; W. and S. W. districts; E. to Chippewa valley and New Ulm; high prairies and hillsides.

HERB.: *Sheldon 1365*, Lake Benton; *Wickersheim 1*, Idlewild, Lincoln Co.; *Holzinger 52*, Cottonwood Co.; *Leiberg 15*, Blue Earth Co.; *Herb. Wickersheim 29*, Idlewild, Lincoln Co.; *Herb. Moyer 53*, Montevideo.

Psoralea incana NUTT. Fras. Cat. (1813).

P. argophylla PURSH, Fl. Am. 475 (1814).
Lotodes argophylla OK. Rev. Gen. I, (1891).

Wats. and Coult., Gray's Man. 6 ed. 131; Upham, Fl. Minn. 42; Webb., Fl. Neb. 132; Coult., Fl. Colo. 57; Mac., Fl. Can. I, 108; Wats., Bibl. Ind. I, 252.

North America: Red and Saskatchewan valleys to Rocky mts. of Brit. Col.; S. to Wisc., Minn., Neb, Kan. and Colo.; W. to Mont. and Wyoming.

Minn. valley: Throughout, at higher levels; dry prairies and hillsides; openings in forests.

HERB.: *Ballard 195*, Jordan, Scott Co.; *Ballard 564*, Prior's lake, Scott Co.; *Ballard 360*, Helena, Scott Co.; *Sheldon 1114*, Springfield; *Sheldon 525*, Waseca; *Sheldon 712*, Sleepy Eye; *Taylor 379*, Janesville; *Taylor 584*, Minnesota lake; *Taylor 878*, Glenwood; *Taylor 778*, Glenwood; *Sandberg 126*, Cannon Falls; *Kassube 55*, Minneapolis; *Leonard 9*, Spring Valley; *Herrick 71*, Minneapolis; *Herb. Sheld. 1741*, Minneapolis; *Herb. Moyer 52*, Minnesota valley near Montevideo.

LOTUS LINN. Gen. 600 (1737).

Tetragonolobus SCOP. Fl. Carn. II, 87 (1772).
Lotea WEBB. Phyt. Car. II, 80 (1842).
Anisolotus BERNH. Ind. Sem. Erfurth (1837).
Pedrosia LOWE, Hook. Journ. VIII, 292 (1847).
Heineckenia WEBB. Exs. Car. B. and H. l. c. (1843?)
Hosackia DOUGL. Benth. Bot. Reg. 1257 (——).
Syrmatium VOG. Linn. X, 590 (1836).

Baillon, *Hist. Pl.* II, 289, 291; Benth. and Hook., *Gen. Pl.* I, 490, 491; Durand, *Ind. Gen. Phan.* 92.

Living species: 200 described; 100 reduced; Europe; Asia; Africa; N. and S. America; Australia. N. America, 26–32; middle Calif., 31; W. Tex., 2; Canada, 5; Rocky mts., 2; E. Sts., 1; S. Sts., 1; Pl. King, 5; Pl. Wheel., 7.

Lotus americanus (NUTT.) BISCH. Hort. Heid. (1839).

L. sericeus PURSH, Fl. Am. 489 (1814) *not DC.*
Trigonella americana NUTT. Gen. II, 120 (1818).
Hosackia unifoliolata HOOK. Fl. Bor.-Am. I, 135 (1833).
Acmispon sericeum RAF. N. Fl. I, 53 (1836).
Hosackia pilosa NUTT. T. and G. Fl. I, 327, 692 (1838).
H. purshiana BENTH. Bot. Reg. 1256 (——).

Wats. and Coult., Gray's Man. 6 ed. 131; Webb., Fl. Neb. 132; Upham, Fl. Minn. 42; Coult. Fl. Colo. 56; Brew. and Wats., Fl. Calif. I, 137; Chap., Fl. S. St. 91; Mac., Fl. Can. I, 108; II, 316; Coult., Fl. Tex. 75; Greene, Fl. Fran. 16; Roth., Wheel Exp. 43, 92, 359; Wats., King Exp. 63, 434; Cov., Fl. Ark. 174; Wats., Bibl. Ind. I, 226.

North America: Brit. Col. and Vancouver to Man.; S. to Washington, Calif., N. Mex. and Mexico; E. to Mont., Dak., Minn., Neb., Ark. and N. Car. (local).

Minn. valley: Far W., and E. to Redwood Co. and the Chippewa river; dry prairies, gravelly shores and banks.

HERB.: *Sheldon 1439,* Dakota line near Elkton; *Herb. Menzel 12,* Pipestone City.

LUPINUS LINN. Gen. 586 (1737).

Baillon, *Hist. Pl.* II, 334; Benth. and Hook., *Gen, Pl.* I, 480; Durand, *Ind. Gen. Phan.* 90.

Living species: 100± described; to be considerably reduced. North America, especially westward, to Bolivia and Brazil; a few around the Mediterranean and in tropical Africa. Russia, 3; Europe, 13; North America, 54–60; California, 50±; Canada 16–18 (Brit. Col. especially); Rocky mts., 13–15; Pl. King, 22; Pl. Wheel., 21; W. Tex., 2; E. Sts., 2; S. Sts. 3.

Lupinus perennis LINN. Spec. 721 (1753).

L. perennis var. *occidentalis* WATS. Rev. Lup. 526 (1875).

Wats. and Coult., Gray's Man. 6 ed. 128; Britt., Fl. N. J. 80; Upham, Fl. Minn. 41; Chap., Fl. S. Sts. 89; Mac., Fl. Can. I, 102, 505; Wats., Bibl. Ind. I, 240.

North America: Toronto to L. Huron reg.; S. to N. Eng., N. J. and Fla.; W. to Minn., Mo. and Miss.

Minn. valley: N. E. district and perhaps along N. edge; Ft. Snelling to Litchfield; dry or sandy places.

HERB.: *Sandberg 124,* Marine Mills; *Holzinger 50,* Winona Co.; *Kassube 54,* Minneapolis; *Lewis 2,* Minneapolis; *Sandstein 1,* Lake Johanna.

LIII. GERANIACEAE. Geranium Family.

Endlicher, *Gen. Pl.* 1166 (1840); Lindl., *Veg. King.* 365 (1846)—*Vivianiaceae*; Benth. and Hook., *Gen. Pl.* I, 269 (1862)—excl. genus *Tropaeolum*, Trib. III, *Limnantheae*, Trib. IV, *Oxalideae*, Trib. VII, *Balsamineae*; Baillon, *Hist. Pl.* V, 1 (1874)—*Series* I, II, III, IV; Reiche, *in Prantl and Engler*, *Nat. Pflanz.* 3, IV, 1 (1889).

Genera: 11; widely distributed over the earth.

Species: 360±; 45 per cent. in genus *Geranium* Linn., 2 fossil species from Baltic amber (*Conwentz*).

GERANIUM LINN. Gen. 554 (1737).

Baillon, *Hist. Pl.* V, 35; Benth. and Hook., *Gen. Pl.* I, 272; Durand, *Ind. Gen. Phan.* 50; Engler and Prantl, *Nat. Pflanz.* 3, VI, 8 (Reiche); Gray *Ill. Gen.* II, 127; Schenck, *Palaeophyt.* 530.

Living species: 160±; temperate regions, especially in N. hemisphere, and a few in the tropics; 4 Pac., 3 Atl.

Fossil species: 1–2, in amber (*Conwentz*).

Geranium carolinianum LINN. Spec. 682 (1753).

G. atrum MOENCH, Meth. 285 (1794).

G. lanuginosum JACQ. Hort. Schoenb. II, 8 (1797).

Wats. and Coult., Gray's Man. 6 ed. 104; Britt., Fl. N. J. 72; Upham, Fl. Minn. 36; Chap., Fl. S. St. 65; Wats., Bibl. Ind. I, 150; Mac., Fl. Can. I, 90; Brew. and Wats., Fl. Calif. I, 94; Engl., Reiche Nat. Pflanz. III, 4, 9; Coult. Fl. Tex. 50; Wats., King Exp. 50; Cov., Fl. Ark. 171.

North America: N. S. to Pac. and Arctic circle; S. to Maine, N. J. and Fla.; W. to S. Calif. and Tex.

Minn. valley: Forest district, particularly N. E.; barren woods and openings.

HERB.: *Taylor 1067*, Alexandria; *Ballard 525*, Cleary's lake, Scott Co.; *Ballard 594*, Prior's lake, Scott Co.; *Roberts 20*, Duluth; *Bailey 199*, Vermilion lake; *Herrick 56*, St. Louis river; *Herrick 57*, Minneapolis; *Sandberg 105*, Red Wing; *Sandberg 106*, Taylor's Falls.

Geranium maculatum LINN. Spec. 681 (1753).

Wats. and Coult., Gray's Man. 6 ed. 103; Britt., Fl. N. J. 72; Chap., Fl. S. St. 65; Upham, Fl. Minn. 36; Mac., Fl. Can. I, 90; Led., Fl. Ross. I, 463?; Cov., Fl. Ark. 171; Wats., Bibl. Ind. 151.

Ural and Baikal Siberia?

North America: Newf., N. S., Ont. to Rainy river; S. to N. Eng., N. J. and Va.; W. to Minn., Kan. and Ark.

Minn. valley: Forest district to Blue Earth Co.; edges of woods and along streams.

HERB.: *Taylor 271*, Janesville; *Sheldon 132*, Madison Lake; *Ballard 40*, Chaska; *Oestlund 20*, Ramsey Co.; *Holzinger 41*, Winona Co.; *Oestlund 21*, Hennepin Co.; *Sandberg 104*, Goodhue Co.; *Herb. Sheld. 1884*, Minneapolis; *Herb. Wickersheim 27*, Mankato.

LIV. OXALIDACEAE. Wood-Sorrel Family.

Endlicher, *Gen. Pl.* 1171 (1840); Benth. and Hook., *Gen. Pl.* I, 270 (1862) —sub *Geraniaceae*; Baillon, *Hist. Pl.* V, 22 (1874)—sub *Geraniaceae*; Reiche, *Engler and Prantl, Nat. Pflanz.* 3, IV, 15 (1889).

Genera: 7; tropical and subtropical regions, sparingly in temperate zones; center in S. Africa and S. America.

Species: 250±; 90 per cent. in genus *Oxalis* Linn.

OXALIS Linn. Gen. 377 (1737).

Biophytum DC. Prodr. I, 689 (1824).

Oxys Tourn. Inst. 88 (1700).

Baillon, *Hist. Pl.* V, 41; Benth. and Hook., *Gen. Pl.* I, 276; Durand, *Ind. Gen. Phan.* 51; Engler and Prantl, *Nat. Pflanz.* 3, VI, 19, 21 (Reiche); Gray, *Ill. Gen.* II, 111; Schenck, *Palaeophyt.* 530.

Living species: 250±; Africa, tropical Asia and America; 3–4 temperate regions; 1–2, tropics of both hemispheres, the rest in S. Africa and tropical America to S. America. North America, 10–12; W. Tex., 6; S. Sts., 3; Rocky mts., 2–3; E. Sts., 5; Canada, 3–4; California, 2; Pl. Wheel., 1.

Fossil species: 2 in amber (*Conwentz*).

Oxalis stricta Linn. Spec. 435 (1753).

O. dillenii Jacq. Oxal. 15, 28 (1794).

O. florida Salisb. Prodr. 322 (1796).

O. corniculata Linn. var. *stricta* Sav. Lam. Enc. Meth. IV, 683 (1797).

O. lyoni Pursh, Fl. Am. 322 (1814).

Wats. and Coult., Gray's Man. 6 ed. 105; Britt., Fl. N. J. 73; Webb., Fl. Neb. 121; Coult., Fl. Colo. 45; Chap., Fl. S. St. 63; Brew. and Wats., Fl. Calif. I, 96; Hook., Fl. Gt. Brit. 84; Mac., Fl. Can. I, 92, 503; Forbes and Hems., Fl. Sin. 99; Led., Fl. Ross. I, 483; Wats., Bibl. Ind. I, 153; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 34; Engl. Reiche, Nat. Pflanz. III, 4, 21; Coult., Fl. Tex. 52; Greene, Fl. Fran. 100; Cov., Fl. Ark. 171.

Middle and N. Europe; N. Asia; China.

North America, N. S. to Man.; S. to N. Eng., Fla.; W. to Colo., Tex. and California.

Minn. valley: Throughout at all levels; damp or cultivated ground; banks of streams and in ravines.

Herb.: *Sheldon 1111*, Springfield; *Taylor 586*, Minnesota lake; *Sheldon 20*, Elysian; *Sheldon 166*, Madison Lake; *Sheldon 965*, Sleepy Eye; *Taylor 122*, Janesville; *Taylor 747*, Glenwood; *Ballard 22*, Chaska; *Ballard 658*, Waconia; *Ballard 534*, Cleary's lake, Scott Co.; *Herrick 64*, St. Louis river; *Roberts 22*, Beaver bay; *Sandberg 110*, Cannon Falls; *Herrick 65*, Minneapolis; *Herb. Sheld. 1741*, Minneapolis.

Oxalis longiflora LINN. Spec. 433 (1753).

O. violacea LINN. Spec. 434 (1753).
O. vespertilionis GRAY, Pl. Fendl. 27 (1849).

Wats. and Coult., Gray's Man. 6 ed. 105; Britt., Fl. N. J. 73; Webb., Fl. Neb. 121; Coult., Fl. Colo. 45; Upham, Fl. Minn. 36; Chap., Fl. S. St. 63; Roth., Wheel. Exp. 81; Cov., Fl. Ark. 171; Wats., Bibl. Ind. I, 153.

North America: N. Eng. to Colo. and S. to N. J., Fla. and Ark.

Minn. valley: E. and central districts to Chippewa river; dry or rocky places and in sterile soil.

HERB.: *Ballard 268,* Jordan, Scott Co.; *Sheldon 745,* Sleepy Eye; *Taylor 587,* Minnesota lake; *Sheldon 1598,* Lake Benton; *Taylor 351,* Janesville; *Huntington 3,* Rock Co.; *Herrick 63,* Minneapolis; *Sandberg 109,* Cannon Falls; *Herb. Sheld. 1885,* Minneapolis; *Herb. Moyer 46,* Montevideo.

LV. LINACEAE. Flax Family.

Endlicher, *Gen. Pl.* 1170 (1840); Benth. and Hook. *Gen. Pl.* I, 241 (1862)—*excl. Trib.* III, *Erythroxyleae*; Baillon, *Hist. Pl.* V, 42 (1874)—*excl. series* III, *Erythroxyleae;* Reiche, Engler and Prantl, *Nat. Pflanz.* 3, IV, 27 (1889).

Genera: 9–10; tropical, subtropical and temperate regions.

Species: 120±, 75 per cent. in genus *Linum* Linn.

LINUM LINN. Gen. 254 (1737).

Adenolinum, Cathartolinum, Linopsis, Xantholinum REICH. Ic. Fl. Germ. VI, 67 (1844).
Cliococca BAB. Trans. Linn. Soc. XIX, 33 (1855).
Radiola GMEL. Syst. 289 (1805).
Reinwardtia DUM. Com. Bot. 19 (1822).
Macrolinum REICH. Ic. Fl. Germ. VI, 68 (1844).

Baillon, *Hist. Pl.* V, 63; Benth. and Hook., *Gen. Pl.* I, 242, 243, 987; Durand, *Ind. Gen. Phan.* 46; Engler and Prantl, *Nat. Pflanz.* 3, IV, 30, 31 (Reiche); Gray, *Ill. Gen.* II, 107; Schenck, *Palaeophyt.* 530.

Living species: 95±; cosmopolitan, mts. in tropics. Russia, 20; Europe, 33; Russian Europe, 14; North America, 18–21; Mid. Calif., 10; Canada, 6; E. Sts., 5; Rocky mts., 3; S. Sts., 4; Pl. Wheel., 3; Pl. King, 2; W. Tex., 9; Pac. coast, 14.

Fossil species: 1; very doubtful, in Oligocene of Europe (*Conwentz*).

Linum rigidum PURSH, Fl. Am. 210 (1814).

Wats. and Coult., Gray's Man. 6 ed. 102; Coult., Fl. Colo. 42; Upham, Fl. Minn. 35; Mac., Fl. Can. I, 89; Coult., Fl. Tex. 47; Roth., Wheel. Exp. 77, 78 in var.; Cov, Fl. Ark. 171; Wats., Bibl. Ind. I, 147; Webb., Appx. Neb. 32.

North America: Saskatchewan to N. W. T.; S. to Minn., Neb., Ark., S. Colo. and Tex.

Minn. valley: W. and S. at higher levels; dry prairies and meadows.

HERB.: *Sheldon 1371*, Lake Benton; *Taylor 1016*, Glenwood; *Herb. Moyer 43*, Montevideo.

Linum sulcatum RIDDELL, Cat. Pl. Ohio Suppl. 10 (1836).

L. striatum NUTT. Gen. I, 206 (1818) *not Walt.*

L. rigidum T. and G. Fl. I, 204 (1838) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 102; Webb., Fl. Neb. 121; Upham, Fl. Minn. 35; Britt., Fl. N. J. 71; Mac., Fl. Can. I, 89; Coult., Fl. Tex. 47; Cov., Fl. Ark. 171; Wats., Bibl. Ind. I, 147.

North America: Ont. to N, W. T.; S. to Mass., N. J.; W. to Minn., Dak., Neb., Ark. and Tex.

Minn. valley: Throughout; prairies; dry meadows and forest openings; common.

HERB.: *Sheldon 1117*, Springfield; *Sheldon 1447*, Pipestone City; *Sheldon 824*, Cottonwood river near Sleepy Eye; *Taylor 791*, Glenwood; *Herrick 54*, Minneapolis; *Herrick 55*, Minneapolis; *Sandberg 102*, Goodhue Co.; *Oestlund 19*, Minneapolis; *Gedge 3*, Detroit lake; *Sandberg 103*, Cannon Falls; *Herb. Sheld. 1704*, Minneapolis; *Herb. Moyer 42*, Montevideo.

Linum lewisii PURSH, Fl. Am. 210 (1814).

L. perenne var. *lewisii* EAT. and WR. Man. 302 (1841).

Wats. and Coult., Gray's Man. 6 ed. 102; Webb. Fl. Neb. 121; Upham, Fl. Minn. 35; Coult., Fl. Colo. 42; Brew. and Wats., Fl. Calif. I, 89; Mac., Fl. Can. I, 89; Coult., Fl. Tex. 46; Cov., Fl. Ark. 171; Wats., Bibl. Ind. I, 146.

North America: Man. to Pac. and Arctic ocean; S. to Calif.; in mts. to Colo., Arizona and Mexico; E. to Ark, Neb., Iowa and Minn.

Minn. valley: N. W. district and Leaf hills; rare; dry, high prairies and hillsides.

LVI. RUTACEAE. Rue Family.

Endlicher, *Gen. Pl.* 1159 (1840); *Aurantiaceae, Zanthoxyleae, Diosmeae*, Endl. *Gen. Pl.* 1143-1149 (1840); Benth. and Hook., *Gen. Pl.* I, 278 (1862); Baillon, *Hist. Pl.* IV, 373 (1873)—excl. series X, *Cneoraceae.*

Genera: 125±; center in S. Africa and Australia; principally tropical and temperate; almost absent from tropical Africa.

Species: 800±, many arborescent.

ZANTHOXYLUM LINN. Gen. ed. VI, 1109 (1764).

Fagara LINN. Gen. 1109 (1737).
Ochroxylum SCHREB. Gen. 826 (1774).
Curtisia SCHREB. Gen. 199 (1774).
Pohlana NEES and MART. N. Act. Cur. XI, 185 (1823).
Kampmannia RAF. Med. Rep. II, hex. V, 350 (1808).
Lacaris HAM. ex Wall. Cat. 7119 (1840?).
Langsdorfia LEANDR. Act. Monac. 229 (1819).
Macqueria COMMERS, ex Juss. Gen. 374 (1789).
Pentanoma MOC. and SESS. Fl. Mex. ex D. C. Prodr. II, (1825).
Perijaea TUL. Ann. Sci. Nat. Ser. 3, VII, 279 (1847).
Pterota P. BR. Jam. Hist. 146, 5 (1756).
Rhetsa W. and ARN'T. Prodr. I, 147 (1834).
Tobinia DESVX. Ham. Prodr. Ind. Occ. 56 (1825).
Typalia DENST. Hort. Malab. V, 34 (1818).
Blackburnia FORST. Char. Gen. 6 (1776).

Baillon, *Hist. Pl.* IV, 468; Benth. and Hook., *Gen. Pl.* I, 297; Durand, *Ind. Gen. Phan.* 55; Gray, *Ill. Gen.* I, 147; Schenck, *Palaeophyt.* 531; Sarg., N. A. Silva I, 65.

Living species; 110±; 80 (B. and H.); all tropical and warmer regions; very numerous in China; wanting in Europe. North America, 5; S. Sts., 3; W. Tex., 2; E. Sts., 2; Canada, 1.

Fossil species: 12–15; Tertiary, N. Europe (*Heer*); N. America (*Lesquereaux*)—3 sp. in Californian region; Japan (*Nathorst*).

Zanthoxylum americanum MILL. Dict. 57 (1768).

Xanthoxylum fraxinifolium MARSH. Arbust. 167 (1785).
Z. fraxineum WILLD. Berl. Baum. 413 (1796).
Z. ramifolium MICHX. Fl. II, 235 (1803).
X. mite WILLD. Enum. 1013 (1809).
Thylax fraxineum RAF. Med. Bot. II, 114 (1830).
Z. tricarpum HOOK. Fl. Bor.-Am. I, 118 (1833).

Wats. and Coult., Gray's Man. 6 ed. 106; Britt., Fl. N. J. 74; Webb., Fl. Neb. 121; Upham, Fl. Minn. 37; Mac., Fl. Can. I, 93; Sarg., Silva I, 67, footnote; Wats., Bibl. Ind. I, 155.

North America: Q. to W. Ont.; S. to N. Eng., N. J. and Del.; W. to Minn. and Neb.

Minn. valley: Forest district and W. to Chippewa and Pomme de Terres rivers; woods and river banks; common.

HERB.: *Taylor 26*, Elysian; *Sheldon 42*, Elysian; *Sheldon 793*, Sleepy Eye; *Sheldon 378*, Madison Lake; *Taylor 693*, Minnesota lake; *Ballard 105*, Shakopee; *Taylor 1042*, Glenwood; *Oestlund 23*, Hennepin Co.; *Kassube 46*, Minneapolis; *Sandberg 111*, Red Wing; *Herb. Sheld. 1851*, Minneapolis; *Herb. Moyer 47*, Montevideo.

PTELEA LINN. Gen. 78 (1737).

Bellucia ADANS. Fam. Pl. II, 344 (1763).

Baillon, *Hist. Pl.* IV, 482; Benth. and Hook., *Gen. Pl.* I, 301; Durand, *Ind. Gen. Phan.* 55; Gray *Ill. Gen.* II, 149; Schenck, *Palaeophyt.* 534; Sarg. N. A. Silva I, 75.

Living species: 7; temperate N. America and S. Mexico. W. Tex., 2; Mid. Calif., 1; S. Sts., 4; E. Sts., 1; Canada, 1; Rocky mts., 1; Pl. Wheel., 1; Pl. King, 1.

Fossil species: 7–10; Tertiary; Oligocene, Europe (*Heer*); Greenland (*Heer*); Sagor (*Ettinghausen*); Hungary (*Unger*).

Ptelea trifoliata LINN. Spec. 118 (1753).

P. pentaphylla FABR. Enum. Pl. Helmst. 416 (1759).
P. viticifolia SALISB. Prodr. 68 (1796).
P. tomentosa RAF. Fl. Lud. 108 (1817).

Wats. and Coult., Gray's Man. 6 ed. 107; Britt., Fl. N. J. 74; Wats., Bibl. Ind. I, 154; Upham, Fl. Minn. 37; Chap., Fl. S. St. 66; Mac., Fl. Can. I, 93, 505; Coult., Fl. Tex. 54; Sarg., Silva, I, 76; Cov., Fl. Ark. 171.

North America: S. Ont. and Long Island to Fla.; W. to Minn., Ark. and Cent. and W. Tex.

Minn. valley: S. E. districts?; doubtful, but reported from S. E. portion of State. No Minn. specimens have been seen.

LVII. POLYGALACEAE. Polygala Family.

Endlicher, *Gen. Pl.* 1077 (1840); Benth. and Hook., *Gen. Pl.* I, 134 (1862); Baillon, *Hist. Pl.* V, 71 (1874).

Genera: 11; temperate and warmer regions.

Species: 400; principally small herbs.

POLYGALA LINN. Gen. 567 (1737).

Solomonia LOUR. Coch. Fl. 14 (1790).
Psycanthus and **Triclisperma** RAF. Specch. 116, 117 (1814).
Epirhizanthus BLUME, Cat. Buit. 25 (1823).
Badiera, Brachytropis, Chamaebuxus, Senega DC. Prodr. I, 321 seq. (1824).
Isolophus, Tricolophus SPACH, Suit. Buff. XI, 112 (1842).
Semeiocardium HASSK. Hort. Bogor. 227 (1844).
Phylace NOR. ex Hassk. l. c. (1844).
Acanthocladus KLOTZSCH, Pl. Sell. (1846?).
Penaea PLUM. Gen. 22 (1703).

Baillon, *Hist. Pl.* V, 87; Benth. and Hook., *Gen. Pl.* I, 136, 137, 974; Durand, *Ind. Gen. Phan.* 27; Gray, *Ill. Gen.* II, 221.

Living species: 275±; cosmopolitan. Europe, 21; Russia, 8; Russian Europe, 8; N. America, 36; S. Sts., 26–28; Calif., 3; Canada, 6; E. Sts., 15–17; Pl. Wheel., 2; W. Tex., 8.

Polygala verticillata LINN. Spec. 706 (1753).

Wats. and Coult., Gray's Man. 6 ed. 122; Chap., Fl. S. St. 85; Britt., Fl. N. J. 59; Webb., Fl. Neb. 122; Upham, Fl. Minn. 40; Coult., Fl. Colo. 30; Mac., Fl. Can. I, 66, 494; Coult., Fl. Tex. 26; Cov., Fl. Ark. 168; Wats., Bibl. Ind. I, 93; Wheel., Rev. Polyg. 122.

North America: Ont. and St. Lawrence valley to Saskatchewan; S. to N. Eng., N. J., Fla. and Miss.; W. to Dak., Neb., Colo., Utah, Ark. and Tex.

Minn. valley: Throughout at higher levels, particularly W.; hillsides and dry prairie.

HERB.: *Sheldon 964,* Sleepy Eye; *Sheldon 816,* Sigel township, Brown Co.; *Sheldon 1346,* Verdi, Lincoln Co.; *Sheldon 1110,* Springfield.

Polygala paucifolia WILLD. Spec. III, 880 (1800).

P. uniflora MICHX. Fl. N. Am. II, 53 (1803).
P. purpurea AIT. f. Hort. Kew. IV, 244 (1812).
Triclisperma grandiflora RAF. Specch. I, 117 (1814).

Wats. and Coult., Gray's Man. 6 ed. 120; Britt., Fl. N. J. 59; Upham, Fl. Minn. 41; Chap., Fl. S. St. 85; Mac., Fl. Can. I, 66, 494; Wats., Bibl. Ind. I, 92; Wheel., Rev. Polyg. 141.

North America: N. Br., Ont., L. Superior reg. and Saskatchewan; S. to N. Eng., N. J., Penn. and Ga.; W. to Minn. and Ill.

Minn. valley: Reported from S. E. edge; rare; woods and shaded banks.

Polygala senega LINN. Spec. 704 (1753).

Senega officinalis SPACH, Hist. Veg. VII, 129 (1839).

Wats. and Coult., Gray's Man. 6 ed. 120; Britt., Fl. N. J. 59; Chap., Fl. S. St. 85; Upham, Fl. Minn. 40; Mac., Fl. Can. I, 66, 494; Cov., Fl. Ark. 168; Wats., Bibl. Ind. I, 93; Wheel., Rev. Polyg. 134.

North America: N. Br., Ont., Man. to Rocky mts.; S. to N. Eng., N. J., Carolinas and Tenn.; W. to Minn., Dak. and Ark.

Minn. valley: Forest district to Chippewa river, infrequent W.; rocky and dry banks.

HERB.: *Ballard 92,* Shakopee; *Sheldon 424,* Janesville; *Sheldon 533,* Waseca; *Taylor 148,* Janesville; *Hammond 21,* Lake City; *Herb. Sheld. 1877,* Minneapolis.

Polygala senega LINN. var. **latifolia** T. and G. Fl. N. A. I, 131 (1838).

Wats. and Coult., Gray's Man. 6 ed. 121; Wheel., Rev. Polyg. 135.

North America: Md. to Mich.; Penn. to Va., Ky. and Tenn.; W. to Minn.

Minn. valley: Forest and N. E. districts; shaded banks and woodland.

HERB.: *Ballard 200*, Jordan, Scott Co.

Polygala cruciata LINN. Spec. 706 (1753).

P cuspidata HOOK. Journ. Bot. I, 194 (1834).

Wats. and Coult., Gray's Man. 6 ed. 121; Britt., Fl. N. J. 59; Webb., Fl. Neb. 122; Upham, Fl. Minn. 40; Chap., Fl. S. St. 84; Wats., Bibl. Ind. I, 90; Wheel., Rev. Polyg. 117.

North America: Maine, N. J., N. Car. to Fla.; W. to Minn., Neb., Kan. and La.

Minn. valley: N. edge and in vicinity of Ft. Snelling; Dakota Co.; low ground and base of hills.

Polygala viridescens LINN. Spec. 705 (1753).

P. sanguinea LINN. Spec. 705 (1753).

P. purpurea NUTT. Gen. II, 88 (1818).

Wats. and Coult., Gray's Man. 6 ed. 121; Upham, Fl. Minn. 40; Chap., Fl. S. St. 83; Britt., Fl. N. J. 59; Mac., Fl. Can. I, 66, 494; Cov., Fl. Ark. 168; Wats., Bibl. Ind. I, 92; Wheel., Rev. Polyg. 127.

North America: Ont. and Maine to N. J. and N. Car.; W. to Minn., Kan., Ark. and Ind. Terr.

Minn. valley: Forest district; Ft. Snelling to Chippewa river; low or sandy soil; river banks.

HERB.: *Oestlund 28*, Hennepin Co.; *Herrick 70*, Minneapolis; *Kassube 53*, Minneapolis; *Sandberg 123*, Red Wing; *Bodin 1*, Center City; *MacM.* and *Sheld. 50*, Brainerd.

LVIII. EUPHORBIACEAE. Spurge Family.

Endlicher, *Gen. Pl.* 1107 (1840); *Antidesmeae*, Endlicher, *Gen. Pl.* 287 (1840); *Bennettiaceae*, Schizl. *Icon.* t. 172 (1843); *Daphniphyllaceae*, Müll-Arg., *DC. Prodr.* xvi, I, 1 (1869); *Hippomaneae*, Agardh, *Theor. Syst.* 244 (1858); *Stiluginaceae* and *Scepaceae*, Lindl. *Veg. King.* 259, 283 (1846); *Phyllantheae* Agardh, *Syst. Theor.*; *Pseudantheae*, *Putranjiveae*, Endlicher, *Gen. Pl.* 288 (1840); *Tithymali* Adans. *Fam.* 356 (1763); *Trewiaceae*, Lindl. *Nat. Syst.* ed. II, 174 (1836); *Tricoccae* Linn. *Philos. Bot.* 32 (1751); Benth. and Hook., *Gen. Pl.* III, 239 (1883); Baillon, *Hist. Pl.* V, 105 (1874); Pax *in Engler and Prantl*, *Nat. Pflanz.* III, 5, 1 (1890).

Genera: 200-220; cosmopolitan; a large number xerophytic; principally in the tropics, but very many temperate forms. Baillon recognises 150± genera.

Species: 3500±, including a large number of desert plants especially in S. Africa, and the Malayan peninsula.

RICINOCARPUS BURM. Thes. Zeyl. 203 (1737), p. p em. O. K. l. c. (1891).

Acalypha LINN. Corr. Gen. 986 (1737, *later*).

Cupameni ADANS. Fam. II, 356 (1763).

Linostachys KLOTZSCH, Linn. XIX, 235 (1845).
Gymnalypha GRISEB. Bonpland. VI, 2 (1858).
Caturus LINN. ex Schreb. Gen. Pl. 677 (1792).
Galurus SPRENG. Syst. I, 138 (1825).
Odonteilema TURCZ. Bull. Soc. Imp. Nat. Mosc. I, 587 (1848).
Calyptrospatha KLOTZSCH, Pet. Moss. Bot. 96 (1862-64).

Benth. and Hook., *Gen. Pl.* III, 311; Durand, *Ind. Gen. Phan.* 368; Engler and Prantl, *Nat. Pflanz.* 3, V, 60 (*Pax*); O. Kuntze, *Rev. Gen.* II, (1891).

Living species: 220±; tropical regions; a few extending into the temperate zones. S. Sts., 5-6; Canada, 1; N. America, 10±.

Ricinocarpus virginicus (LINN.) OK. Rev. Gen. II, 615 (1891).

Acalypha virginica LINN. Spec. (1753).
A. caroliniana WALT. Fl. Car. 238 (1788).
A. virginica var. *genuina* MULL.-ARG. Linn. XXXIV, 44 (1860).

Wats. and Coult., Gray's Man. 6 ed. 459; Britt., Fl. N J. 215; Webb., Fl Neb. 123; Upham, Fl. Minn. 123; Mac., Fl. Can. I, 427; Chap.. Fl. S. St. 405; Cov., Fl. Ark. 218; Engl. Pax, Nat. Pflanz. III, 5, 62.

North America: Ont. and N. Eng. to Fla.; W. to Minn., Neb. and Ark.

Minn. valley: Forest district to Blue Earth Co.; E. and S.; fields, openings and roadsides.

HERB.: *Sandberg 492*, Red Wing; *Manning 8*, Lake City; *Holzinger 208*, Winona Co.

EUPHORBIA LINN. Gen. 429 (1737).

Tithymalus GAERT. Fruct. II, 115 (1791).
Anisophyllum HAW. Syn. Succ. 159 (1812).
Adenopetalum, Eumecanthus, Leptopus, Dichrophyllum, Tithymalopsis, Tricherostigma, Euphorbiastrum, Arthrothamnus, Sterigmanthe KLOTZSCH and GARCKE, Monatsb. Akad. Berl. (1859).
Petaloma RAF. Fl. Tell. (1836).
Alectoroctonum SCHLECHT. Linn. XIX, 252 (1845).
Poinsettia GRAH. Edin. Phil. Journ. XX, 412 (1840).
Anthacantha LEM. Ill. Hort. (1858).
Treissia, Dactylanthes, Medusea, Galarhoeus, Esula HAW. Succ. 131-153 (1812).
? **Keraselma** and **Athymalus** NECK. Elem. II, 353 (1790).

Benth. and Hook., *Gen. Pl.* III, 258; Durand, *Ind. Gen. Phan.* 360; Engler and Prantl, *Nat. Pflanz.* 3, V, 103 (*Pax*); Schenck, *Palaeophyt.* 594.

Living species: 600±; tropical and temperate regions; less abundant in the tropics. Europe, 107; Russia, 70; European Russia, 38; E. Sts., 19-20; Rocky mts., 15; Mid. Calif., 9; all Calif., 15; Canada, 9; S. Sts., 32; Pl. King, 6; Pl. Wheel., 11; N. America, 55-60.

Fossil species: Tertiary; Bonn, Bohemia; *Euphorbioides* (*Wessel and Weber*); *Euphorbiophyllum* (*Ettinghausen*).

Euphorbia dictyosperma FISCH. and MEY. Ind. Sem. Petrop. 37 (1835).

E. arkansana ENGELM. and GRAY, Pl. Lindh. I. 53 (1845).

Wats. and Coult., Gray's Man. 6 ed. 455; Webb., Fl. Neb. 123; Upham, Fl. Minn. 123; Coult., Fl. Colo. 327; Wats., Fl. Calif. II, 75; Greene, Fl. Fran. 90; Roth., Wheel, Exp. 248; Wats., King Exp. 320; Engl. Pax, Nat. Pflanz. III, 5, 110.

North America: Oregon to Santa Barbara; E. to Tex., Ky., Iowa and Minn.

Minn. valley: W. districts; prairies; infrequent or rare.

HERB.: *Moyer 217*, Montevideo.

Euphorbia heterophylla LINN. Amoen. Acad. III, 112 (1756).

E. cyathophora MURR. Prodr. Gött. (1770).

Wats. and Coult., Gray's Man. 6 ed. 454; Webb., Fl. Neb. 123; Upham, Fl. Minn. 123; Cov., Fl. Ark. 217; Engl. Pax, Nat. Pflanz. III, 5, 107.

North America: Minn., Ill., Iowa, Neb., Kan., Mo., Ark. and Tenn.?

Minn. valley: Throughout; local or infrequent; sandy slopes and sunny banks of streams or lakes.

HERB.: *Sheldon 797*, Sigel township, Brown Co.; *Sheldon 941*, Redwood Falls; *Oestlund 170*, Minneapolis; *Herrick 268*, Minneapolis; *Herrick 269*, Minneapolis.

Euphorbia corollata LINN. Amoen. Acad. III, 122 (1756).

Galarhoeus corollatus HAW. Succ. II, 161 (1812).

Wats. and Coult., Gray's Man. 6 ed. 454; Britt., Fl. N. J. 214; Mac., Fl. Can. I, 425; Upham, Fl. Minn. 123; Webb., Fl. Neb. 123; Cov., Fl. Ark. 217.

North America: L. Huron to Ont. and Mass.; S. to N. Y., N. J., Fla.; W. to Minn., Dak., Neb., Ark. and La.

Minn. valley: Throughout; frequent; dry or open and sandy fields.

HERB.: *Ballard 644*, Chaska; *Leonard 44*, Fillmore Co.; *Holzinger 207*, Winona Co.; *Herrick 267* Minneapolis; *Oestlund 169*, Minneapolis; *Kassube 213*, Minneapolis; *Sandberg 491*, Goodhue Co.

Euphorbia marginata PURSH, Fl. Am. II, 607 (1814).

E. leucoloma RAF. in Herb. Phil. (1833).

Wats. and Coult., Gray's Man. 6 ed. 454; Webb., Fl. Neb. 123; Upham, Fl. Minn. 123; Coult., Fl. Colo. 327; Engl. Pax, Nat. Pflanz. III, 5, 106.

North America: Minn., Dak., Colo., Neb., Kan. and Mo.; spreading eastward to Ohio.

Minn. valley: S. W. districts to Franklin township eastward; hills and banks or high fields.

HERB.: *Sheldon 930*, Crow creek, near Redwood Falls

Euphorbia nutans LAGASCA, Gen. et. Spec. 17 (1816).

E. maculata LINN. Mant. (1767).
? *E. androsaemifolium* PRESL, Delic. Prag. 57 (1822).
E. presslii GUSS. Prodr. Fl. Sicul. I, 539 (1827).
E. hypericifolia Plur. Auct. Amer.
? *E. trinervis* BERTOL. Fl. Ital. V, 37 (1842).
E. hypericifolia var. *communis* ENGELM. Chap. Fl. S. St. 403 (1860).

Wats. and Coult., Gray's Man. 6 ed. 453; Britt., Fl. N. J. 214; Webb., Fl. Neb. 123; Upham, Fl. Minn. 123; Mac., Fl. Can. I, 427; II, 354; Greene, Fl. Fran. 92; Roth., Wheel. Exp. 247; Engl. Pax, Nat. Pflanz. III, 5, 104.

North America: Ont.? and N. Eng. to N. J. and Fla.; W. to Dak., Neb., Kan. and Ark.; also in upper Sacremento valley and in C. America and Ecuador.

Minn. valley: Forest district; not common; open, sterile places or in fields.

HERB.: *Sandberg 490*, Red Wing; *Holzinger 206*, Dresbach; *Herrick 266*, Minneapolis.

Euphorbia humistrata ENGELM. Gray's Man. 3 ed. 386 (1859).

Wats. and Coult., Gray's Man. 6 ed. 453; Britt., Fl. N. J. 214; Webb., Fl. Neb. 123; Upham, Fl. Minn. 123; Greene, Fl. Fran. 92.

North America: Ind. and W. Tenn. to Minn., Dak., Neb. and Kan.; also in Calif. and introd. in N. J.

Minn. valley: E. edge and S. districts; rare; alluvial soil in shaded places.

HERB.: *Sandberg 489*, Red Wing.

Euphorbia maculata LINN. Spec. 21 (1753).

E. thymifolia PURSH, Fl. Am. II, 606 (1814).
E. depressa TORR. Ell. Sk. II, 655 (1824).
E. hypericifolia HOOK. Fl. Bor.-Am. II, 140 (1840) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 453; Britt., Fl. N. J. 214; Webb., Fl. Neb. 123; Upham, Fl. Minn. 123; Mac., Fl. Can. I, 425; Chap., Fl. S. St. 403; Coult., Fl. Colo. 326: Cov., Fl. Ark. 217; Engl. Pax, Nat. Pflanz. III, 5, 105.

North America: Ont. to Saskatchewan; N. Eng. to Fla.; W. to Dak., Colo., Neb., Mo. and Ark.

Minn. valley: Throughout; particularly S. W. districts; banks, fields and roadsides.

HERB.: *Ballard 526*, Cleary's lake, Scott Co.; *Sheldon 917*, Sleepy Eye; *Sheldon 1560*, Lake Benton; *Sheldon 1285*, Lake Benton; *Sheldon 986*, Cross lake, Brown Co.; *Oestlund 167*, Hennepin Co.; *Oestlund 168*, Minneapolis; *Herrick 265*, Minneapolis; *Holzinger 205*, Winona Co.; *Sandberg 488*, Red Wing.

Euphorbia glyptosperma ENGELM. Bot. Mex. Bound. II, 187 (1859).

E. polygonifolia HOOK. Fl. Bor.-Am. II, 140 (1848) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 453; Webb., Fl. Neb. 123; Upham, Fl. Minn. 123; Mac., Fl. Can. I, 425; Coult., Fl. Colo. 328; Wats., Fl. Calif. II, 74; Wats., King Exp. 320; Roth., Wheel. Exp. 246.

North America; Ont., Saskatchewan, Brit. Col. to Pac.; S. to Minn., Dak., Neb., Mo., Ill., Wisc. and Colo.

Minn. valley: Throughout; common; sandy places and embankments.

HERB.: *Sheldon 966,* Sleepy Eye; *Sheldon 1557,* Lake Benton; *Sheldon 1169,* New Ulm; *Sheldon 1597,* Lake Benton; *Ballard 161,* Chaska; *Taylor 784,* Glenwood; *Sheldon 1102,* Springfield; *Ballard 527,* Cleary's lake, Scott Co.; *Holzinger 204,* Winona Co.; *Oestlund 166,* Minneapolis; *Herrick 264,* Minneapolis; *Holzinger 205,* Winona Co.; *Herb. Sheld. 1925,* Minneapolis.

Euphorbia serpyllifolia PERS. Syn. II, 14 (1807).

Wats. and Coult., Gray's Man. 6 ed. 453; Webb., Fl. Neb. 123; Mac., Fl. Can. I, 424; Upham, Fl. Minn. 123; Wats., Fl. Calif. II, 74; Coult., Fl. Colo. 326; Greene, Fl. Fran. 91; Wats., King Exp. 320; Roth., Wheel. Exp. 246; Engl. Pax, Nat. Pflanz. III, 5, 105.

North America: Columbia river, Moose mt., N. W. T., Saskatchewan; S. along Pac. to Monterey and Gt. Basin region to Tex. and Mex.; E. to Kan., Neb., Dak. and Minn.

Minn. valley; Throughout; frequent; sandy or waste places or embankments.

HERB.: *Taylor 1152,* Glenwood; *Herb. Sheld. 1900,* Cedar lake, Hennepin Co.

Euphorbia geyeri ENGELM. Pl. Lindh. I, 52 (1845).

Wats. and Coult., Gray's Man. 6 ed. 452; Upham, Fl. Minn. 123; Webb., Appx. Neb. 33.

North America: Ill., Wisc., Minn., Kan., Neb. to Tex.

Minn. valley: Reported from N. E. district; sandy places or along railway embankments.

LIX. STELLARIACEAE. Water-Starwort Family.

Benth. and Hook., *Gen. Pl.* I, 673 (1862)—sub *Halorageae*; Baillon, Hist. Pl. V, 250 (1874)—sub *Euphorbiaceae; Pax in Engler and Prantl, Nat. Pflanz.* 3, V, 120 (1890)—*Callitrichaceae;* Endlicher, *Gen. Pl.* 268 (1840)—*Callitrichinae.*

Genera: 1; cosmopolitan in fresh waters; aquatic.

Species: 1–2; 25 (*Hegelmaier*).

STELLARIA Ludw. Defin. 27 (1737).

Callitriche Linn. Syst. VI, 82 (1748) ex O. Kuntze l. c. (1891).

Benth. and Hook., *Gen. Pl.* I, 676; Durand, *Ind. Gen. Phan.* 122: O. Kuntze, *Rev. Gen.* I, 234, Engler and Prantl, *Nat. Pflanz.* 3, V, 122 (Pax).

Living species: 1-2; temperate and colder regions. 25 sp. (Hegelmaier); N. America, 11 (*Morong*); E. Sts., 4; S. Sts., 5; Canada, 4; Pac. coast, 6-7; Rocky mts., 4.

Stellaria verna (Linn.).

Callitriche verna Linn. Fl. Suec. ed. II, 2 (1755).
Stellaria vernalis Wigg. Prim. Holst. (——).
Callitriche heterophylla Pursh, Fl. Am. 3 (1814).
C. vernalis Koch, Syn. ed. I, 245 (1837).
? *C. asagrayi* Hegelm Mon. Call. 54 (1864).
? *C. stenocarpa* Hegelm. Verh. Bot. Brand. X, 114 (1868?).
? *C. bolanderi* Hegelm. Verh. Bot. Brand. X, 114 (1868?).

Wats. and Coult., Gray's Man. 6 ed. 182; Britt., Fl. N. J. 106; Coult., Fl. Colo. 328; Wats., Fl. Calif. II, 77; Chap., Fl. S. St. 399; Upham, Fl. Minn. 122: Hook., Fl. Gt. Brit. 152; Herd., Fl. Eur. Russ. 52; Mac., Fl. Can. I, 530; Morong, Torr. Bull. XVIII, 236; Roth., Wheel. Exp. 119; Wats., King. Exp. 102; Cov., Fl. Ark. 182; Engl. Pax, Nat. Pflanz. 3, V, 122; Led., Fl. Ross. II, 121: Hart., Fl. Scand. I, 382; Greene, Fl. Fran 229.

Europe; all Asia; circumboreal and in S. America.

North America: Most abundant in northern and Canadian waters; but occurring throughout the continent.

Minn. valley: N. districts; infrequent; aquatic in lakes or pools.

Herb.: *Bailey 367*, Mud river; *Roberts 121*, Stewart river; *Bailey 400*, Mud lake.

LX. ANACARDIACEAE. Cashew Family.

Endlicher, *Gen. Pl.* 1127 (1840); Benth. and Hook., *Gen. Pl.* I, 415 (1862); Baillon, *Hist. Pl.* V, 257 (1874)—*Terebinthaceae, in part.*

Genera: 50±; tropical and subtropical regions; sparingly in temperate zones; trees or shrubs.

Species: 600±; many in Central America.

RHUS Linn. Gen. 241 (1737).

Anaphrenium E. Mey. Herb. Drège.
Heeria Meissn. Gen. Comm. 55 (1843).
Lobadium Raf. Journ. Phys. LXXXIX, 98 (1819).
Malosma Nutt. ex Baillon, Hist. Pl. V, 321 (1874).
Metopium P. Br. Jam. Hist. 177 (1756).
Ozoroa Del. Ann. Sci. Nat. Ser. 2, XX, 91 (1843).
Roemeria Thunb. Fl. Cap. 194 (1809).
Turpinia Raf. Med. Rep. II, hex 2, 352 (1808).
Styphonia Nutt. T. and G. Fl. I, 220 (1838).
Schmalzia Desvx. Jour. Bot. III, 229 (1809).

Cotinus and **Toxicodendron** TOURN. Inst. 610 (1700).
Lithraea MIERS. Trav. Chile, II, 529 (1826).
Vernix ADANS. Fam. Pl. II, 342 (1763).
Pocophorum NECK. Elem. II, 226 (1790).
Melanococca BLUME, Lug. Bat. I, 236 (1833).

Baillon, *Hist. Pl.* V, 321; Benth. and Hook., *Gen. Pl.* I, 418; Durand, *Ind. Gen. Phan.* 86; Gray, *Ill. Gen.* II, 157; Sargent, *N. Am. Silva* III, 1, 7; Schenck, *Palaeophyt.* 543.

Living species: 120±; principally at the Cape of Good Hope; also warmer extra-tropical regions, and a few in the tropics. Russia, 2; Europe, 4; N. America, 14; Canada, 7–9; W. Tex., 6; S. Sts., 9; Pl. Wheel., 6; E. Sts., 7; Calif., 4; Rocky mts., 3.

Fossil species: 30–40 spec. Cretaceous, N. Amer. (*Lesquereaux*) and Greenland (*Heer*); Tertiary Europe (*Saporta and others*); N. America (*Lesqx.*) and Asia.

Rhus radicans LINN. Spec. 266 (1753).

R. toxicodendron var. *radicans* TORR. Fl. U. S. 324 (1824).
R. toxicodendron AUCT. AMER. *in part.*

Wats. and Coult., Gray's Man. 6 ed. 119; Britt., Fl. N. J. 79; Chap., Fl. S. St. 69; Upham, Fl. Minn. 37; Webb., Fl. Neb. 121; Coult., Fl. Colo. 49; Mac., Fl. Can. I, 101; Nym., Fl. Eur.; Miyabe, Fl. Kur. 224; Coult., Fl. Tex. 68; Roth., Wheel. Exp. 84; Wats., King. Exp. 53; Cov., Fl. Ark. 173; Wats., Bibl. Ind. I, 183.

Saghalin, Japan and Kurile Isls.; intro. from East in Germany.

North America: N. S. to Saskatchewan; S. to N. Eng., N. J. and Fla.; W. to Dak., Colo., Ark. and Tex.

Minn. valley: Throughout; shores of lakes, low ground and edges of woods; abundant.

HERB.: *Taylor 131*, Janesville; *Taylor 179* Janesville; *Ballard 190*, Jordan, Scott Co.; *Taylor 546*, Janesville; *Sheldon 169*, Madison Lake; *Ballard 337*, Jordan, Scott Co.; *Taylor 624*, Minnesota lake; *Sheldon 1468*, Pipestone City; *Sheldon 884*, Sleepy Eye; *Sheldon 55*, Elysian; *Ballard 688*, Waconia; *Kassube 47*, Minneapolis; *Holzinger 45*, Winona Co.

Rhus vernix LINN. Spec. 265 (1753).

Toxicodendron pinnatum MILL. Dict. ed. 8 (1768).
Rhus venenata DC. Prodr. II, 68 (1825).

Wats. and Coult., Gray's Man. 6 ed. 119; Chap., Fl. S. St. 69; Upham, Fl. Minn. 37; Britt., Fl. N. J. 79; Mac., Fl. Can. I, 100, 505; Wats., Bibl. Ind. I, 184; Sarg., N. A. Silv. III, 23.

North America, W. Ont. and N. N. Eng. to N. J., N. Car., N. Ga. and Alab.; W. to Minn., Ark. and W. La.

Minn. valley: Ft. Snelling and only far N. E.; swamps and springsides; rare.

Rhus copallina LINN. Spec. 266 (1753).

Wats. and Coult., Gray's Man. 6 ed. 119; Britt., Fl. N. J. 79; Chap., Fl. S. St. 69; Webb., Fl. Neb. 121; Upham, Fl. Minn. 37; Mac., Fl. Can. I, 100; Coult., Fl. Tex. 67; Cov., Fl. Ark. 173; Wats., Bibl. Ind. 182; Sarg., N. A. Silva III, 19.

North America: Thousand Islands, Can. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Ark. and Rio Grande river; Cuba.

Minn. valley: Forest district, Ft. Snelling to Blue Earth Co.; rare; hillsides and dry banks.

HERB.: ? *Sandberg 112*, Cannon Falls.

Rhus glabra LINN. Spec. 265 (1753).

R. carolinense MARSH. Arbust. 129 (1785).

R. elegans AIT. Hort. Kew. I, 366 (1789).

Wats. and Coult., Gray's Man. 6 ed. 119; Britt., Fl. N. J. 79; Webb., Fl. Neb. 121; Coult., Fl. Colo. 49; Chap., Fl. S. St. 69; Upham Fl. Minn. 37; Mac., Fl. Can. I, 100, 505; Wats., King Exp. 52, 419; Roth., Wheel. Exp. 84; Cov., Fl. Ark. 173; Wats., Bibl. Ind. I, 182.

North America: N. S. to Ont., Man. and Saskatchewan?; S. to N. Eng., N. J.. Fla. and Miss.; W. to Minn., Colo., Neb. and Ark.; Arizona.

Minn. valley: Throughout; rocky and dry situations, especially banks and hillsides.

HERB.: *Taylor 524*, Janesville; *Taylor 820*, Glenwood; *Ballard 84n*, Chaska; *Sheldon 1513*, Lake Benton; *Oestlund 24*, Minneapolis; *Bailey 230*, Vermilion lake; *Bailey 254*, Vermilion lake; *Holzinger 44*, Winona Co.; *Herb. Sheld. 1917*, Minneapolis; *Herb. Moyer 48*, Montevideo.

Rhus typhina LINN. Amoen. IV, 311 (1759).

Datisca hirta LINN. Spec. 1037 (1753).

Rhus hypselodendron MOENCH, Meth. 73 (1794).

R. typhina var. *arborescens* WILLD. Enum. 323 (1809)

R. typhina var. *frutescens* WILLD. l. c.

R. hirta per legem, not Harv.

Wats. and Coult., Gray's Man. 6 ed. 119; Britt., Fl. N. J. 79; Upham, Fl. Minn. 37; Chap., Fl. S. St. 69; Mac., Fl. Can. I, 100; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 36; Cov., Fl. Ark. 73; Wats., Bibl. Ind. I, 184; Sarg., N. A. Silva III, 15.

Introduced in Europe.

North America: N. S.?, N. B., Ont., W. of Lake Huron and Minn.; S. to N. Eng., N. J., N. Car., Alab., Miss.; W. to Mo. and Ark,

Minn. valley: E. portion of valley and N. edge to central region; rocky hillsides and banks.

HERB.: *Taylor 448*, Janesville; *Taylor 448½*, Lake Helena, Waseca Co.; *Sheldon 383*, Madison Lake; *Ballard 116*, Chaska; *Holzinger 43*, Winona Co.

LXI. CELASTRACEAE. Staff-Tree Family.

Endlicher, *Gen. Pl.* 1085 (1836–40); Benth. and Hook., *Gen. Pl.* I, 357 (1862) *excl. Hippocrateae*; Baillon, *Hist. Pl.* VI, 1 (1877).

Genera: 35±; tropical regions and less abundantly in temperate.

Species: 250± living; several (10–15) fossil.

EVONYMUS LINN, Gen. 79 (1737).

Vyenomus PRESL, Bot. Bem. 32 (1844).
Melanocarya TURCZ. Bull. Mosq. XXXI, I, 453 (1860).

Baillon, *Hist. Pl.* VI, 30; Benth. and Hook., *Gen. Pl.* I, 360; Durand, *Ind. Gen. Phan.* 65; Gray, *Ill. Gen.* II, 187; Schenck, *Palaeophyt.* 578; Sargent, *N. Am. Silv.* II, 9.

Living species: 40+; Northern hemisphere to Mexico; Malay archipelago and N. Australia; centers in N. E. India, China and Japan. North America, 6 7; Mexico, 4–5; W. Tex., 1; Calif., 1; E. Sts,, 2; S. Sts.,. 2; Russia, 6; Europe, 3; Russian Europe, 3.

Fossil species: Greenland and N. Europe; Tertiary.

Evonymus atropurpureus JACQ. Hort. Vind. II, 55 (1772).

E. caroliniensis MARSH. Arbust. 43 (1785).
E. latifolius MARSH. Arbust. 44 (1785).

Wats. and Coult., Gray's Man. 6 ed. 110; Britt., Fl. N. J. 75; Webb., Fl. Neb. 122; Chap., Fl. S. St. 76; Upham, Fl. Minn. 39; Mac., Fl. Can. I, 95; Cov., Fl. Ark. 172; Wats., Bibl. Ind. I, 161.

North America: Ont. and N. Y. to N. J. and Fla.; W. to Minn., Neb., Dak., Kan., Ark. and Miss.

Minn. valley: Throughout, E. of the Pomme des Terres river; wooded banks and shores of lakes.

HERB.: *Sheldon 221*, Madison Lake; *Sheldon 622*, Wilton, Waseca Co.; *Roberts 23*, Lake Lilian; *Herrick 67*, Minneapolis; *Sandberg 116*, Vasa; *Kassube 51*, Minneapolis; *Herb. Moyer 50*, Chippewa river, near Montevideo.

CELASTRUS LINN. Gen. 168 (1737).

Denhamia MEISSN. Gen. 18 (1836).
Gymnosporia WIGHT. and ARN. Prodr. I, 159 (1834).
Maytenus FEUILL. ex Juss. Gen. 449 (1789).
Putterlickia ENDL. Gen. 1086 (1840).
Catha ENDL. Gen. 5678 (1840).
Eucentrus and **Polyacanthus** PRESL, Bemerk. 33 (1844).
Scytophyllum S. and Z. Enum. I, 124 (1837).
Orixa THUNB. Fl. Jap. 3 (1784).
Leucocarpon A. RICH. Sert. Astrol. 46 (1832).
? **Hedraianthera** F. MULL. Frag. V, 58 (1882).
Cassine HARV. and SOND. Fl. Cap. I, 452, 465 (1863).
Haenkea R. and P. Prodr. 36 (1798).

Monteverdia RICH. Cub. I, 346 (1850).
? **Moya** GRIS. Pl. Lorenz. 63 (1874).
Maiten FUEILL. Obs. III, 39 (1714).

Baillon, *Hist. Pl.* VI, 46; Benth. and Hook., *Gen. Pl.* I, 364, 365, 366; Durand, *Ind. Gen. Phan.* 66; Gray, *Ill. Gen.* II, 185; Schenck, *Palaeophyt.* 580.

Living species: 135±; 18 (*B. and H.*); cosmopolitan; centers in tropics. North America: Canada, 1; E. Sts., 1; S. Sts,, 1; S. Tex., 2.

Fossil species: Cretaceous, Upper and Lower *(Lesquereaux, Fontaine)*, N. and S. America, Alaska, Greenland *(Heer)*; Australia (*Ettinghausen*); Tertiary: *Celastrophyllum* Göppert—Europe; Potomac.

Celastrus scandens LINN. Spec. 196 (1753).
C. bullatus LINN. Spec. 196 (1753).
Evonymoides scandens MOENCH, Meth. 70 (1794).

Wats. and Coult., Gray's Man. 6 ed. 110; Britt., Fl. N. J. 76; Upham, Fl. Minn. 39; Webb., Fl. Neb. 122; Chap., Fl. S. St. 77; Mac., Fl. Can. I, 94, 503; Wats., Bibl. Ind. I, 161.

North America: Q., Ont., L. Superior region to Man. and Assiniboia; S. to N. Eng., N. J. and N. Car.; W. to Minn., Neb. and Kan.

Minn. valley: Throughout; banks of streams and in thickets; climbing over underbrush; common.

HERB.: *Taylor 1009*, Glenwood; *Taylor 898*, Glenwood; *Sheldon 1488*, Pipestone City; *Taylor 1165*, Glenwood; *Taylor 35*, Elysian; *Taylor 126*, Janesville; *Sheldon 918*, Sleepy Eye; *Ballard 85*, Chaska; *Kassube 50*, Cedar lake; *Bailey 235*, Vermilion lake; *Holzinger 46*, Winona Co.; *Herb. Sheld. 1771*, Ft. Snelling; *Herb. Moyer 262*, Chippewa Co.

LXII. AQUIFOLIACEAE. Holly Family.

Endlicher, *Gen Pl.* 1092 (1836-40)—*Ilicineae;* Benth. and Hook. *Gen. Plant.* I, 355 (1862); Baillon, *Hist. Pl.* XI, (1892).

Genera: 3–4; principally in tropics, a few extra-tropical.

Species: 150±; 145 in *Ilex.* Almost all Central American but some extending through all temperate and tropical regions A few fossil leaves from Tertiary of Greenland, referred here.

ILEX LINN. Gen. 91 (1737), p. p. Benth. l. c. (1862).
Prinos LINN. Gen. 441 (1737).
Paltoria RUIZ and PAV. Fl. Peruv. I, 54 (1798).
Macoucoua AUBL. Pl. Gui. I, 88 (1775).

Chomelia VELLOZ. Flum. I, 106 (1827).
Pileostegia TURCZ. Bull. Mosc. XXXII, 276 (1859).
Leucodermis PLANCH. Herb. Hook.
Byronia ENDL. Ann. Wien. I, 184 (1835).
Polystigma MEISSN. Gen. 252 (1 43).

Benth. and Hook., *Gen. Pl.* I, 356; Durand, *Ind. Gen. Phan.* 65; Schenck, *Palaeophyt.* 580; Baillon, *Hist. Pl.* XI, (1892).

Living species: 175±; cosmopolitan. Centers in Brit. Guiana and Brazil; very infrequent in Africa and Australia; 13–14, E. North America. S. Sts., 12; E. Sts., 9; Canada, 4.

Fossil species: Tertiary, Greenland and Alaska (*Heer*).

Ilex verticillata (LINN.) GRAY, Man. 5 ed. 307 (1867).
Prinos verticillatus LINN. Spec. 330 (1753).
P. confertus MOENCH, Meth. 481 (1794).
P. gronovii MICHX. Fl. N. Am. II, 236 (1803).

Wats. and Coult., Gray's Man. 6 ed. 109; Britt., Fl. N. J. 75; Upham, Fl. Minn. 95; Chap., Fl. S. St. 270; Mac., Fl. Can. I, 93; Cov., Fl. Ark. 172; Wats., Bibl. Ind. I, 160.

North America: N. S. to C. Ont and Minn.; S. to N. Eng., N. J. and Fla.; W. to Ill., Iowa, Mo. and Ark.

Minn. valley: Reported from the N. edge but somewhat doubtful, low woodland.

HERB.: *Sandberg 388,* Marine Mills; *Herrick 188,* St. Louis river.

LXIII. STAPHYLEACEAE. Bladder-Nut Family.

Endlicher, *Gen. Pl.* 1084 (1836-40); Bentham and Hooker, *Gen. Pl.* I, 392 (1862)—sub *Sapindaceae;* Baillon, *Hist. Pl.* V, 392.

Genera: 2; N. extra-tropical region.

Species: 15±; principally in Chinese-Japanese region and E. India. Fossils from Green river Tertiary, Wyoming.

STAPHYLEA LINN. Gen. 248 (1737).
Bumalda THUNB. Fl. Jap. 8 (1784).
Staphylodendron TOURN. Inst. 616 (1700).

Baillon, *Hist. Pl.* V, 392; Benth. and Hook., *Gen. Pl.* I, 412; Durand, *Ind. Gen. Phan.* 83; Schenck, *Palaeophyt.* 554; Gray, *Ill. Gen.* II, 181.

Living species: 4; 1, Europe; 2, N. America; 1, Himalayas and Japan; Atl. states, 1; Pac. America, 2.

Fossil species: 1, Green river group, Tertiary, N. America (*Lesquereaux*).

Staphylea trifolia LINN. Spec. 270 (1753).
Staphylodendrum trifoliatum MOENCH, Meth. 64 (1794).

Wats. and Coult., Gray's Man. 6 ed. 118; Chap., Fl. S. St. 77; Britt., Fl. Neb. 78; Upham, Fl. Minn. 39; Webb., Fl. Neb. 122; Mac., Fl. Can. I, 98; Cov , Fl. Ark. 173; Wats., Bibl. Ind. I, 181.

North America: Q., Ont. to Georgian bay; S. to N. Eng,, N. J., Car. and Tenn.; W. to Minn., Neb. and Ark.

Minn. valley: Forest region; Ft. Snelling to Blue Earth Co. and W. to New Ulm; edges of woods and shaded banks.

HERB.: *Sheldon 313*, Stony Point, Lake Madison; *Anderson 1*, Goodhue Co.; *Sheldon 705*, White Bear lake; *Sheldon 553*, Waseca; *Sheldon 172*, Eagle Lake, Blue Earth Co.; *Sheldon 628*, Wilton, Waseca Co.; *Holzinger 47*, Winona Co.; *Sundberg 117*, Cannon Falls; *Herb. Wickersheim 28*, Mankato.

LXIV. ACERACEAE. Maple Family.

Endlicher, *Gen. Pl.* 1055 (1840); Bentham and Hooker, *Gen. Pl.* I, 388 (1862)—sub *Sapindaceae;* Baillon, *Hist. Pl.* V, 373 (1874)—sub *Sapindaceae.*

Genera: 2; temperate N. hemisphere to Java and N. India.

Species: 60±; center in Himalayan region; 55 in *Acer.*

ACER LINN. Gen. 317 (1737).

Negundo MOENCH, Meth. 334 (1794).

Negundium RAF. Med. Rep. II, V, 350 (1808).

Baillon, *Hist. Pl.* V, 427; Benth. and Hook., *Gen. Pl.* I, 409; Gray, *Ill. Gen.* II, 199; Durand, *Ind. Gen. Phan.* 82; Schenck, *Palaeophyt.* 557; Sargent, *N. Am. Silv.* II, 79.

Living species: 75±; China and Japan, 30±; Himalayas, 12; Europe and Orient, 12; North America, 9; E. Sts., 6; Pac. coast, 3; Rocky mts., 2; Canada, 9; Pl. Wheel., 4; Pl. King., 4; northern hemisphere and S. to mts. of Java.

Fossil species: Greenland and Spitzbergen, Tertiary (*Heer*); Cretaceous, N. America (*Lesquereaux, Newberry*); Tertiary Europe, 5 sp.; principally Oligocene, few Miocene; Miocene of Saghalin; Pliocene in Japan (*Nathorst*). Tertiary, N. America, numerous.

Acer negundo LINN. Spec. 1056 (1753).

Negundo aceroides MOENCH, Meth. 334 (1794).
Negundium fraxinifolium RAF. Desv. Jour. Bot. V, 170 (1809).
Negundo fraxinifolium NUTT. Gen. I, 253 (1818).
? *N. mexicanum* DC. Prodr. I, 596 (1824).
N. trifoliatum and *lobatum* RAF. N. Fl. I, 48 (1830).
N. negundo SUDW. Gard. and For. IV, 166 (1891).

Wats. and Coult., Gray's Man. 6 ed.; Britt., Fl. N. J. 78; Coult , Fl. Colo. 49; Brew. and Wats., Fl. Calif. I, 108; Chap., Fl. S. St. 81; Upham, Fl.

Minn. 40; Webb., Fl. Neb. 120; Mac., Fl. Can. I, 100, 504; Coult., Fl. Tex. 66; Wats., King Exp. 52; Roth., Wheel. Exp. 42, 84, 357; Cov. Fl. Ark. 173; Wats., Bibl. Ind. I, 180.

North America: Saskatchewan to Man. and Toronto; N. Eng., N. J. to Fla.; W. to Mont., Dak., Neb., Colo., Utah and Tex.; Arizona; also on Pac. coast in a well-marked variety; N. Mex., Mexico.

Minn. valley: Forest district and along river banks, throughout; moist woods and shores of lakes.

HERB. *Sheldon 1099*, Springfield; *Sheldon 162*, Madison Lake; *Taylor 73*, Elysian; *Taylor 157*, Janesville; *Oestlund 26*, Minneapolis; *Holzinger 49*, Winona Co.; *Kassube 52*, Minneapolis; *Oestlund 27*, Hennepin Co.; *Sandberg 122*, Cannon Falls.

Acer rubrum LINN. Spec. 1055 (1753).

? *A. glaucum* MARSH. Arbust. Amer. 2 (1785).

? *A. carolinianum* WALT. Fl. Car. 251 (1788).

A. coccineum MICHX. f. Arb. Am. II, 203 (1810).

A. sanguineum SPACH, Ann. Sci. Nat. II, 2, 176 (1834).

A. microphyllum and *semiorbiculatum* PAX, Engl. Jahrb. VII, 181 (1888).

Wats. and Coult., Gray's Man. 6 ed. 118; Britt., Fl. N. J. 78; Chap., Fl. S. St. 81; Upham, Fl. Minn. 40; Mac., Fl. Can. I, 99; Cov., Fl. Ark. 173; Wats., Bibl. Ind. I, 176; Sarg., Silva, II, 107; Upham, Suppl. Minn. 50.

North America: Lat. 49° N. in N. Br., Q. and Ont. to S. Fla., W. Man., Dak., Ark., Ind. Terr. and Tex.

Minn. valley: Forest district; reported from Redwood Falls; swampy woodland and river banks.

HERB.: *Bailey 186*, Vermilion lake; *Sandberg 121*, Goodhue Co.

Acer barbatum MICHX. Fl. N. Am. II, 252 (1803).

A. saccharinum WANG. Amer. Holz. 26 (1787) *not Linn.*

A. saccharophorum KOCH, Hort. Dendr. 80 (1853).

A. saccharum BRITT. Fl. N. J. 78 (1890) *not Marsh.*

Wats. and Coult., Gray's Man. 6 ed. 117; Upham, Fl. Minn. 39; Chap., Fl. S. St. 80; Mac., Fl. Can. I, 99; Cov., Fl. Ark. 173; Wats., Bibl. Ind. I, 176; Sarg., Silva, II, 97.

North America: Newf. and N. S. to Man.; S. to Maine, N. J. and Va.; W. to Minn., Neb.? and Tex.

Minn. valley: Forest district, Ft. Snelling to Brown Co. and W. to the Chippewa river; rich woods and along streams.

HERB.: *Ballard 120*, Chaska; *Sheldon 297*, Madison Lake; *Sheldon 808*, Sigel township, Brown Co.; *Taylor 159*, Janesville; *Holzinger 48*, Winona Co.; *Sandberg 119*, Vasa;

Sandberg 120, Winona Co.; *Bailey 225*, Vermilion lake; *Herb. Sheld. 1860*, Minneapolis.

Acer barbatum MICHX. var. **nigrum** (MICHX. f.) SARG. Gard. and For. II, 364 (1888).

Acer nigrum MICHX. f. Arbr. Amer. II, 238 (1810).
A. saccharinum var. *nigrum* T. and G. Fl. I, 248 (1838).
A. saccharum var. *nigrum* BRITT. Cat. N. J. 78 (1890).

Wats. and Coult., Gray's Man. 6 ed. 117; Upham, Fl. Minn. 40; Mac., Fl. Can. I, 99; Cov., Fl. Ark. 173; Wats., Bibl. Ind. I, 176; Sarg., Silva, II, 99.

North America: Ont., Vt., N. J. to Alab. and Miss.; W. to Minn., Kan. and Ark.

Minn. valley: Reported from Le Sueur Co., and probably occuring S. E. and S.

Acer saccharinum LINN. Spec. 1055 (1753).

A. saccharum MARSH. Arbust. Amer. 4 (1785).
A. rubrum LAUTH. De Acer. 11 (1781).
A. dasycarpum EHRH. Beitr. IV. 24 (1789).
A. rubrum var. *pallidum* AIT. Hort. Kew. III, 434 (1789).
A. eriocarpum MICHX. Fl. N. Am. II, 253 (1803).

Wats. and Coult., Gray's Man. 6 ed. 117; Britt., Fl. N. J. 78; Chap., Fl. S. St. 81; Upham, Fl. Minn. 40; Webb., Fl. Neb. 122; Mac., Fl. Can. I, 99; Cov., Fl. Ark. 173; Wats., Bibl. Ind. I, 175; Sarg., Silva, II, 103.

North America: N. Br. and Ont. to N. J. and Fla.; W. to Dak., Neb., Kan., Ark. and Ind. Terr.

Minn. valley: Throughout, especially in forest district; banks of streams and shores of lakes.

HERB: *Sheldon 468*, Madison Lake; *Bailey 109*, Vermilion lake; *Herb. Moyer 51*, Montevideo.

Acer spicatum LAM. Enc. Meth. II, 381 (1786).

A. pennsylvanicum DU ROI, Diss. 61 (1771).
A. parviflorum EHRH. Beitr. IV, 25, 26, 40 (1789).
A. montanum AIT. Hort. Kew. III, 435 (1789).

Wats. and Coult., Gray's Man. 6 ed. 117; Chap., Fl. S. St. 80; Britt., Fl. N. J. 78; Upham, Fl. Minn. 39; Mac., Fl. Can. I, 98; Miyabe, Fl. Kur. 223 in var.; Wats., Bibl. Ind. I, 177; Sarg., Silv. II, 83.

North America: Newf. and N. S. to Man. and Saskatchewan; S. in Appalachians to Ga.; W. to Minn. and Ky. There is a variety, scarcely to be separated from the type, which occurs from Japan and Saghalin to Manchuria.

Minn. valley: Local; bluffs, near Ft. Snelling; lower levels, in woods.

HERB.: *Herrick 68*, St. Louis river; *Roberts 24*, Duluth; *Bailey 228*, Vermilion lake; *Sandberg 118*, Tower; *Manning 1*, Lake City.

Acer pennsylvanicum Linn. Spec. 1055 (1753).

A. canadense Marsh. Arbust. 3 (1785).

A. striatum Du Roi, Diss. 58 (1771).

Wats. and Coult., Gray's Man. 6 ed. 117; Britt., Fl. N. J. 77; Chap., Fl. S. St. 80; Upham, Fl. Minn. 39; Mac., Fl. Can. I, 98; Wats., Bibl. Ind. I, 175.

North America: N. S., N. Br., Q., Ont. to L. Superior; S. to N. Eng., N. J., Ga., Ky., Mo.; W. to Minn.

Minn. valley: Local; bluffs, near Ft. Snelling.

LXV. BALSAMINACEAE. Balsam Family.

Endlicher, *Gen. Pl.* 1173 (1836-40); Bentham and Hooker, *Gen. Plant.* I, 269 (1862)—sub *Geraniaceae;* Baillon, *Hist. Pl.* V, 39 (1874)—sub *Geraniaceae.*

Genera: 1-2; Tropical Asia and a few in N. temperate floral region and in Africa.

Species: 225±; center in tropical Asia.

IMPATIENS Linn. Gen. 680 (1737).

Balsamina Gaertn. Fruct. II, 151 (1791).

Hydrocera Blume, Bijdr. 241 (1826).

Tytonia Don, Syst. I, 749 (1831).

Baillon, *Hist. Pl.* V, 39; Benth. and Hook., *Gen. Pl.* I, 277, 278, 989; Durand, *Ind. Gen. Phan.* 53; Gray, *Ill. Gen.* II, 133.

Living species: 225±; 135 (B. and H.); North America, 2; N. Europe and Asia, 3; Africa and Madagascar, 23; all the others in tropical Asia.

Impatiens biflora Walt. Fl. Car. 219 (1788).

I. maculata Muhl. Cat. 26 (1813).

I. fulva Nutt. Gen. I, 146 (1818).

I. nolitangere var. *B.* Michx. Fl. N. Am. II, 149 (1803).

Wats. and Coult., Gray's Man. 6 ed. 106; Britt., Fl. N. J. 74; Webb., Fl. Neb. 121; Upham, Fl. Minn. 36; Chap., Fl. S. St. 65; Mac., Fl. Can. I, 62, 502; Cov., Fl. Ark. 171; Wats., Bibl. Ind. I, 152.

North America: Throughout Can. to lat. 66° N. and Alaska; S. to New Eng. and Fla.; W. to Minn., Dak., Neb. and Ark.

Minn. valley: Throughout, but particularly in the forest district; damp places and edges of swamps; springs.

Herb.: *Sheldon 1043,* Sleepy Eye; *Taylor 984,* Glenwood; *Sheldon 27,* Elysian; *Sheldon 1311,* Lake Benton; *Ballard 709,* Waconia; *Ballard 868,* Waconia; *Ballard 753,* Waconia; *Ballard 851,* Patterson's lake; *Herrick 59,* Minnetonka; *Herrick 60,* Excelsior; *Herrick 61,* Minneapolis; *Oestlund 22,* Hennepin Co.; *Herrick 62,* Minneapolis; *Arthur 7,* Vermilion lake; *Roberts*

21, Beaver bay; *Bailey 118*, Vermilion lake; *Sandberg 108*, Red Wing; *Herb. Moyer 45*, Montevideo.

Impatiens aurea MUHL. Cat. 26 (1813).

I. nolitangere MICHX. Fl. N. Am. II, 149 (1803) *not Linn.*
I. pallida NUTT. Gen. I, 146 (1818).

Wats. and Coult., Gray's Man. 6 ed. 106; Britt., Fl. N. J. 73; Webb., Fl. Neb. 121; Chap., Fl. S. St. 65; Upham, Fl. Minn. 36; Mac., Fl. Can. I, 92; Cov., Fl. Ark. 171; Wats., Bibl. Ind. 152; Brew. and Wats., Fl. Calif. I, 93.

North America: Ont. to Saskatchewan and Washington; S. to N. Eng., N. J. and Ga.; W. to Minn., Dak., Neb., Ark.

Minn. valley: Forest district to Blue Earth Co. and W. to the Chippewa river; rich, damp places; springs.

HERB.: *Taylor 277*, Janesville; *Ballard 896*, Waconia; *Taylor 1160*, Glenwood; *Herrick 58*, Minnetonka; *Sandberg 107*, Goodhue Co.; *Herb. Moyer 44*, Montevideo.

LXVI. RHAMNACEAE. Buckthorn Family.

Endlicher, *Gen. Pl.* 1094 (1836–40); Bentham and Hooker, *Gen. Plant* I, 371 (1862); Baillon, *Hist. Pl.* VI, 51 (1877).

Genera: 40±; tropical and warmer regions.
Species: 500±; fossil, 10–12 (*Tertiary*).

CEANOTHUS LINN. Act. Ups. 77 (1741).

Paliurus ADANS. Fam. Pl. II, 304 (1763) *in part.*
Forrestia RAF. Med. Rep. II, hex. V, 350 (1808).

Baillon, *Hist. Pl.* VI, 80; Benth. and Hook., *Gen. Pl.* I, 378; Durand, *Ind. Gen. Phan.* 69; Sargent, *N. Am. Silva*, II, 41; Gray, *Ill. Gen.* II, 181; Schenck, *Palaeophyt.* 588.

Living species: 40±; N. America, western, temperate and tropical. Centers on Pac. coast. 19–22, California; 4, Rocky mts.; Canada, 4; S. Sts., 3; E. Sts., 2; Pl. King, 6; Pl. Wheel., 4; W. Tex., 4; Mexico and Central America, ±15.

Fossil species: 2; Java, Tertiary (*Göppert*); Bonn, Germany (*Weber*), Tertiary.

Ceanothus ovatus DESV. Arb. II, 381 (1809).

C. ovalis BIGEL. Fl. Bost. ed. 2, 92 (1824).
C. intermedius HOOK. Fl. Bor.-Am. I, 124 (1833).

Wats. and Coult., Gray's Man. 6 ed. 112; Upham, Fl. Minn. 39; Webb., Fl. Neb. 122; Coult., Fl. Colo. 47; Mac., Fl. Can. I, 96; II, 314; Coult., Fl. Tex. 60; Wats., Bibl. Ind. I, 165.

North America, Ont. and L. Huron and L. Superior region to N. Eng., Ill., Minn., Dak., Neb., Colo., Wyoming and W. Tex.

Minn. valley: local; New Ulm; rare; sandy ridges and rocks.

Ceanothus americanus LINN. Spec. 195 (1753).

C. trinervus MOENCH, Meth. 651 (1794).
C. herbaceus RAF. Med. Repos. V, 360 (1808).
C. perennis and *intermedius* PURSH, Fl. Am. 167 (1814).
C. sanguineus NUTT. Gen. I, 153 (1818).
C. officinalis RAF. Med. Bot. II, 205 (1830).

Wats. and Coult., Gray's Man. 6 ed. 112; Britt., Fl. N. J. 77; Upham, Fl. Minn. 39; Webb., Fl. Neb. 122; Chap., Fl. S. St. 74; Mac., Fl. Can. I, 95; Coult., Fl. Tex. 60; Cov., Fl. Ark. 172; Wats., Bibl. Ind. I, 163.

North America: Ont. to Man.; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Ark., Miss. and W. Tex.

Minn. valley: Throughout; dry and open woodland and along river banks.

HERB.: *Sheldon 1171*, New Ulm; *Ballard 740*, Waconia; *Sheldon 931*, Redwood Falls; *Ballard 465*, Prior's lake, Scott Co.; *Sheldon 734*, Sleepy Eye; *Ballard 566*, Prior's lake, Scott Co.; *Herrick 66*, Minneapolis; *Kassube 49*, Rocky lake; *Sandberg 115*, Red Wing.

RHAMNUS LINN. Gen. 165 (1737) em.

Alaternus TOURN. Inst. 595 (1700).
Frangula MOENCH, Meth. Suppl. 271 (1802).
Marcorella NECK. Elem. 799 (1790).
Cardiolepis RAFIN. Neogen, 2 (1825).
Sciadophila PHIL. Linn. XXVIII, 618 (1854).
Rhamnella MIQ. Ann. Mus. Lugd.-Bat. III, 30 (1857).
Microrhamnus MAXIM. Mem. Ac. Petr.

Benth. and Hook., *Gen. Pl.* I, 377; Baillon, *Hist. Pl.* VI, 74; Durand, *Ind. Gen. Phan.* 68; Schenck, *Palaeophyt.* 585.

Living species: 70±; temperate regions of Europe, Asia and America; a few in the tropics; absent from Africa, Australia and Oceanica. N. America, 6–7; E. Sts., 3, W. Sts., 3–4.

Fossil species: Upper Cretaceous and Tertiary; Greenland, W. America, Siberia, Europe, Azores, Switzerland, Java; 15–20 sp. (*Lesquereaux*, *Heer*, *Göppert*).

Rhamnus alnifolia L'HER. Sert. Angl. 5 (1788).

R. franguloides MICHX. Fl. Am. I, 153 (1803).
R. alpinus RICH. Frankl. Journ. 6 (1823).
Girtanneria alnifolia and *franguloides* RAF. Fl. Tellur. 28 (1836).

Wats. and Coult., Gray's Man. 6 ed. 111; Britt., Fl. N. J. 76; Wats., Bibl. Ind. I, 168; Mac., Fl. Can. I, 96; Webb., Fl. Neb. 122; Upham, Fl. Minn. 38.

North America: N. Br., Maine, Ont., N. J., Penn. to Minn., Neb., Mont. and N. W. T. to Rocky mts.

Minn. valley: N. E. and N. districts; wooded banks and in forest.

HERB.: *Sheldon 1928*, Lake Calhoun; *Bailey 457*, Mud lake; *Kassube 276*, Minneapolis.

LXVII. VITACEAE. Vine Family.

Endlicher, *Gen. Pl.* 796 (1836–40)—*Ampelideae*; Benth. and Hook. *Gen. Pl.* I, 386; Lindl., *Veg. King.* 439 (1846).

Genera: 12±; temperate and tropical regions, less abundant in America.

Species: 260±; fossil species, 35–45–50; Cretaceous and Tertiary.

PARTHENOCISSUS PLANCH. Monog. Ampel. 446 (1887).

Ampelopsis MICHX. Fl. Bor.-Am. I, 159 (1803) *p. p.*
Quinaria RAF. ex Planch. 488 (1887).

Durand, *Ind. Gen. Phan.* 70; O. Kuntze, *Rev. Gen.* I, 125; Gray, *Ill. Gen.* II, 165; Schenck, *Palaeophyt.* 594; Benth. and Hook., *Gen. Pl.* I, 387.

Living species: 10; temperate Asia; E. N. America.

Fossil species: 1–2, Tertiary, N. America, Greenland?

Parthenocissus quinquefolia (LINN.) PLANCH. Monog. Ampel. I, 488 (1887).

Hedera quinquefolia LINN. Spec. 292 (1753).
Vitis hederacea EHRH. Beitr. Bot. I, 17 (1787).
V. quinquefolia LAM. Ill. II, 135 (1793).
Ampelopsis hirsuta DON, Cat. Cant. 166 (1796).
A. quinquefolia MICHX. Fl. N. Am. I, 160 (1803).
Cissus hederacea PERS. Syn. I, 143 (1805).
Ampelopsis hederacea DC. Prodr. I, 633 (1824).
Quinaria hederacea and *hirsuta* RAF. Med. Bot. II, 122 (1830).

Wats. and Coult., Gray's Man. 6 ed. 115; Britt., Fl. N. J. 77; Coult., Fl. Colo. 48; Chap., Fl. S. St. 72; Webb., Fl. Neb. 123; Upham, Fl. Minn. 38; Mac., Fl. Can. I, 97; Coult., Fl. Tex. 63; Roth., Wheel. Exp. 83; Cov., Fl. Ark. 173; Wats., Bibl. Ind. I, 170; Hart., Scand. Fl. I, 559.

North America: Q. to Man. and Assiniboia; S. to N. Eng., N. J. and Fla.; W. to Minn., Dak., Neb., Colo., Kan., Ark. and W. Tex.

Minn. valley: Throughout; banks of streams, climbing over shrubbery or on tree-trunks; frequent.

HERB.: *? Taylor 812*, Glenwood; *Ballard 90*, Chaska; *Sheldon 1581*, Lake Benton; *Taylor 786*, Minnesota Lake; *Sheldon 1607*, Madison Lake; *Sandberg 114*, Red Wing; *Herb. Moyer 49*, Montevideo.

VITIS Linn. Gen. 161 (1737).

Planchon, *Mon. Amp.* 321; Benth. and Hook., *Gen. Pl.* I, 387; Durand, *Ind. Gen. Phan.* 70; Gray, *Ill. Gen.* II, 163; O. Kuntze, *Rev. Gen.* I, 125; Schenck, *Palaeophyt.* 593.

Living species: 30±; northern and temperate regions in both hemispheres. Russia, 1; Europe, 1; N. America, 15; S. Sts., 11; E. Sts., 8; Canada, 3; W. Tex., 8; Calif., 1; Rocky mts., 1; Pl. Wheel., 3.

Fossil species: Cretaceous, Europe and N. Amer.; Tertiary, Greenland (*Heer*); Wyoming (*Lesquereaux*); France (*Saporta* and *Marion*); Pliocene or Quat., Japan (*Nathorst*); older Tertiary, Japan (*Nathorst*); 25–30 sp. descr.

Vitis aestivalis Michx. Fl. N. Am. II, 230 (1803).

V. laciniosa Marsh. Arbust. 165 (1785).
V. labrusca Walt. Fl. Car. 243 (1788).
V. palmata Vahl, Symb. III, 42 (1794).
V. vulpina Jacq. Hort. Schoenbr. IV, 13 (1804).
V. virginiana Poir. Enc. Meth. VIII, 608 (1810).
V. intermedia and *labruscoides* Muhl. Cat. 26 (1813).

Wats. and Coult., Gray's Man. 6 ed. 113; Britt., Fl. N. J. 77; Upham, Fl. Minn. 38; Webb., Fl. Neb. 123; Chap., Fl. S. St. 71; Mac., Fl. Can. I, 504; Coult., Fl. Tex. 62; Roth., Wheel. Exp. 83?; Cov., Fl. Ark. 172; Wats., Bibl. Ind. I, 171.

North America: Ont. along L. Erie to N. Eng., N. J. and S. to Fla.; W. to Minn., Neb., Ark., Miss. and Pecos river in Tex.

Minn. valley: Throughout but local; reported from Big Stone, Ft. Snelling and Worthington.

Vitis riparia Michx. Fl. N. Am. II, 231 (1803).

V. vulpina Linn. Spec. 203 (1753) *in part.*
V. odoratissima Don, Cat. Cant. 66 (1796).
V. incisa Jacq. Hort. Schoenb. IV, 14 (1804).
V. cordifolia var. *riparia* Gray, Man. 5 ed. 113 (1867).

Wats. and Coult., Gray's Man. 6 ed. 114; Britt., Fl. N. J. 77; Webb., Fl. Neb. 123; Chap , Fl. S. Sts. 71; Upham, Fl. Minn. 38; Mac., Fl. Can. I, 97, 504; Coult., Fl. Tex. 63; Cov., Fl. Ark. 172; Wats., Bibl. Ind. I, 173.

North America: N. S., N. Br. to Lake Winnipeg; S. to N. Eng., N. J. and Penn.; W. to Minn., Neb., Kan., Ark. and Tex.

Minn. valley: Throughout; less common than *V. cordifolia* Lam.; river banks and thickets.

Herb.: *Sheldon 1333,* Lake Benton; *Ballard 30,* Chaska; *Sheldon 1485,* Pipestone City; *Sheldon 34,* Elysian; *Herb. Moyer 259,* Montevideo.

Vitis cordifolia Lam. Ill. II, 134 (1793).

V. vulpina Muhl. Cat. 26 (1813).

V. vulpina var. *cordifolia* Regel, Consp. Vit. 304 (1873).

Wats. and Coult., Gray's Man. 6 ed. 113; Britt., Fl. N. J. 77; Webb., Fl. Neb. 123; Upham, Fl. Minn. 38; Chap., Fl. S. St. 71; Mac., Fl. Can. I, 97; Coult., Fl. Tex. 63; Cov., Fl. Ark. 172; Wats., Bibl. Ind. 172.

North America: S. W. Ont.? to Maine.; S. to N. J. and Fla.; W. to Minn., Neb., Kan., Ark., Miss. and Tex.

Minn. valley: Forest region and banks of streams to Pommes des Terres river; river banks and shrubbery; common.

Herb.: *Sheldon 364*, Madison Lake; *Taylor 712*, Minnesota lake; *Sheldon 1003*, Sleepy Eye; *Sheldon 984*, Cross lake, Brown Co.; *Taylor 488*, Janesville; *Oestlund 25*, Hennepin Co.; *Kassube 48*, Minneapolis; *Sandberg 113*, Chisago Co.

LXVIII. TILIACEAE. Linden Family.

Endlicher, *Gen. Pl.* 1004 (1836-40); Bentham and Hooker, *Gen. Plant.* I, 228 (1862); Baillon, *Hist. Pl.* IV, 461 (1873); Schumann *in Engler and Prantl, Nat. Pflanz.* 3, VI, 8 (1890).

Genera: 35; distributed from two centers; (1) S. E. Asia; (2) Brazil *(Schumann)*. Common in tropics; more abundant in N. hemisphere than in S.

Species: 375± living; 25± fossil in Tertiary rocks.

TILIA Linn. Gen. 440 (1737).

Baillon, *Hist. Pl.* IV, 185; Benth. and Hook., *Gen. Pl.* I, 236, 986; Durand, *Ind. Gen. Phan.* 45; Engler and Prantl, *Nat. Pflanz.* 3, VI, 24 (Schumann); Gray, *Ill. Gen.* II, 93; Schenck, *Palaeophyt.* 519.

Living species: 10; Northern hemisphere. Russia, 6; China and Japan, 6; Russian Europe, 5; Europe 5; North America, 5; Canada, 1–2; E. Sts., 3; S. Sts., 3; Mexico, 1; W. Tex., 1; not in California region, Central Asia or Himalayas.

Fossil species: 14-18 described from Alaska, Spitzbergen, Saghalin (*Heer*), Amur, Europe, Japan (*Nathorst*), Denmark, N. America (*Newberry* and *Lesquereaux*); Tertiary and Interglacial.

Tilia americana Linn. Spec. 514 (1753).

T. caroliniana Mill. Dict. VIII, 4 (1768).

T. latifolia Salisb. Prodr. 367 (1796).

T. pubescens Nouv. Duham. I, 51 (1801)

T. glabra Vent. Monog. Til. 9 (1802).

T. canadensis Michx. Fl. N. Am. I, 306 (1803).

T. stenopetala Raf. Fl. Lud. 92 (1817).

T. neglecta Spach, Ann. Sci. Nat. 2, II, 340 (1834).

Wats. and Coult., Gray's Man 6 ed. 101; Webb., Fl. Neb. 120; Britt., Fl. N. J. 71; Chap., Fl. S. St. 59; Upham, Fl. Minn. 35; Mac., Fl. Can. I, 88; Engl. Nat. Pflanz. III, 6, 24; Coult., Fl. Tex. 46; Cov., Fl. Ark. 171; Wats., Bibl. Ind. I, 145; Sarg., Silva I, 49.

North America: N. B., Q., Ont., Man. to Assiniboia; S. to N. Eng., N. J. and Ga.; W. to Minn., Neb. and Tex.

Minn. valley: Throughout; especially in forest district, but on banks of streams; W. to Dakota line; rich soil.

HERB.: *Taylor 485,* Janesville; *Sheldon 56,* Elysian; *Sheldon 654,* Waseca; *Taylor 662,* Cobb river, Blue Earth Co.; *Taylor 800,* Glenwood; *Ballard 555,* Spring lake, Scott Co.; *Sheldon 848,* Sleepy Eye; *Sheldon 389,* Madison Lake; *Herrick 53,* Minneapolis; *Holzinger 40,* Winona Co.; *Bailey 224,* Vermilion lake; *Bailey 249,* Vermilion lake; *Sandberg 101,* Cannon Falls; *Herb. Wickersheim 26,* Lake Benton.

LXIX. MALVACEAE. Mallow Family.

Endlicher, *Gen. Pl.* 978 (1836-40); Bentham and Hooker, *Gen. Plant.* I, 195; Baillon, *Hist. Pl.* IV, 57 (1873)—*excl. Sterculiaceae;* Schumann *in Engler and Prantl, Nat. Pflanz.* 3, VI, 30 (1890).

Genera: 30±; cosmopolitan.

Species: 650-700; most abundant in tropics. A large number endemic in W. hemisphere.

MALVA LINN. Gen. 557 (1737).

Callirrhoe NUTT. Jour. Phil. Acad. II, 181 (1822).
Nuttallia BART. Fl. Am. II, 74 (1822).
Malvastrum DC. Prodr. I, 430 (1824).
Malvella JAUB. and SPACH, Ill. Or. V, 47 (1853).
Phyllanthophora GRAY, Wilkes Exp. I, 151 (1854).
Nototriche TURCZ. ex Baill. Hist. l. c. (1873).

Baillon, *Hist. Pl.* IV, 138; Benth. and Hook., *Gen. Pl.* I, 201; Engler and Prantl, *Nat. Pflanz.* 3, VI, 40, 41 (Schumann); Durand, *Ind. Gen. Phan.* 38; Gray, *Ill. Gen.* II, 49, 51, 59.

Living species: 100±; N. America, 25; rest in Cape of Good Hope region, Europe and Asia and N. Africa. Canada, 1; E. Sts., 4-5; S. Sts., 6; W. Tex., 10; rest Mexican, S-westward and Central America. S. America, 15-20 sp.

Malva triangulata LEAVENW. Am. Jour. Sci. VII, 62 (1823).
M. houghtonii T. and G. Fl. I, 225 and 681 (1838).
Callirrhoë triangulata GRAY, Pl. Fendl. 16 (1849).

Wats. and Coult., Gray's Man. 6 ed. 98; Upham, Fl. Minn. 34; Chap., Fl. S. St. 53; Wats., Bibl. Ind. I, 133.

North America: Ind. to Minn.; S. to N. Car. and Alab.

Minn. valley: Prairie region on higher levels; far S. W.; dry and exposed hillsides; rare.

Malva involucrata (NUTT.) T. and G. Fl. I, 226 (1838).

Nuttallia involucrata NUTT. T. Ann. Lyc. N. Y. II, 172 (1830).
Callirrhoë involucrata GRAY, Pl. Lindh. 159 (1845).

Wats. and Coult., Gray's Man. 6 ed. 98; Webb. Fl. Neb. 121; Coult., Fl. Colo. 41; Cov., Fl. Ark. 170; Coult., Fl. Tex. 36; Wats., Bibl. Ind. I, 133.

North America: Minn. to Neb., Colo., Tex. and Ariz.

Minn. Valley: Reported from western edge.

NAPAEA LINN. Syst. VI, add. (1748).

Baillon, *Hist. Pl.* IV, 139; Benth. and Hook., *Gen. Pl.* I, 201; Durand, *Ind. Gen. Phan*, I, 38; Gray, *Ill. Gen.* II, 55; Engler and Prantl, *Nat. Pflanz.* 3, VI, 41 (Schumann).

Living species: 1; North America.

Napaea dioica LINN. Spec. 686 (1753).

N. scabra LINN. Mant. II, 435 (1774).
Sida dioica CAV. Diss. I, 138 (1791).

Wats. and Coult., Gray's Man. 6 ed. 98; Upham, Fl. Minn. 34; Engl. Schum., Nat. Pflanz. III, 6, 41; Wats., Bibl. Ind. I, 139.

North America: Penn. to Va.; W. to Minn. and Iowa.

Minn valley: S. E. district and to Martin Co.; rare; ravines and hillsides.

HERB.: *Sandberg 100*, Vasa.

HIBISCUS LINN. Gen. 562 (1737).

Lagunaea, Triguera CAV. Diss. 41, 173 (1791).
Trionum, Abelmoschus MEDIC. ex DC. I, 446 (1824).
Bombycodendron ZOLL. Hassk. Pl. Java 301 (1848).
Paritium ST. HIL. Fl. Bras. Mer. I, 295 (1825).
Lagunaria DON, Syst. I; 485 (1831).
Senra CAV. Diss. II, 83 (1793).
Ketmia TOURN. Inst. 99 (1700).
Hymenocalyx ZENK. Pl. Ind. 8 (1835).
Dumreichera HOCHST. Flora (1838).

Baillon, *Hist. Pl.* IV, 139; Benth. and Hook., *Gen. Pl.* I, 207; Durand, *Ind. Gen. Phan.* 39; Engler and Prantl, *Nat. Pflanz.* 3, VI, 47, 48, 49 (Schumann); Gray, *Ill. Gen.* II, 81.

Living species: 165+; principally in the tropical and sub-tropical regions of the earth; Russia, 2; Europe, 2; Russian Europe, 2; N. America, 15; W. Tex., 3; S. Sts., 9; E. Sts., 3; Canada, 2; California, 2—4; Pl. Wheel., 1.

Hibiscus militaris CAV. Diss. I, 352 (1791).

H. laevis SCOP. Del. Fl. III, 35 (1778).
H. virginicus WALT. Fl. Car. 177 (1778) *not Linn.*
H. hastatus MICHX. Fl. N. Am. II, 45 (1803).
H. riparius PERS. Syn. II, 254 (1807).

Wats. and Coult., Gray's Man. 6 ed. 100; Upham, Fl. Minn. 34; Webb., Fl. Neb. 120; Chap., Fl. S. St. 58; Cov., Fl. Ark. 170; Wats., Bibl. Ind. I, 135

North America: Penn. to Minn. and Neb.; S. to Va. and Ark.

Minn. valley: Ft. Snelling; E. edge and N. E. district; rare; river banks and shore of lakes.

LXX. HYPERICACEAE. St. John's-Wort Family.

Endlicher, *Gen. Pl.* 1036 (1836-40); Bentham and Hooker, *Gen. Plant.* I, 163 (1862); Baillon, *Hist. Pl.* VI, 391 (1877).

Genera; 8; temperate and warmer regions.

Species: 225±; more abundantly represented in N. hemisphere than in S.

HYPERICUM Linn. Gen. 606 (1737).

Elodea, Elodes, Triadenia, Adenotrias, Drosanthe, Eremosporus, Webbia, Hypericum, Olympia, Campylopus, Psorophytum, Androsaemum, Eremanthe, Campylosporus, Norysca, Roscyna, Myriandra, Brathydium Spach, Ann. Sci. Nat. Ser. 2, V, 353 (1836).

Androsaemum All. Fl. Ped. II, 47 (1785).

Brathrys Mut. ex Linn. f. Suppl. 43 (1781).

Sarothra Linn. Gen. ed. V, 344 (1754).

Tridia Korth. Hoev. and De Vr. Tijd. III, 17 (1836).

Receveura Vell. Fl. Flum. V, 119, 120 (1826).

Baillon, *Hist. Pl.* VI, 391; Benth. and Hook., *Gen. Pl.* I, 165; Durand, *Ind. Gen. Phan.* 33; Gray, *Ill. Gen.* I, 213.

Living species: 175±; 160 (B. and H.); temperate and tropical regions; very numerous in N. temperate zone; very rare in S. temperate; Russia, 23; Europe, 41; Russian Europe, 10; N. America, 31; E. Sts., 17; Canada, 11; S. Sts., 25; Pl. King, 2; Pl. Wheel, 1; Mid. Calif., 3; Rocky mts., 1; W. Tex. 4.

Hypericum canadense Linn. Spec. 785 (1753).

H. thesiifolium HBK. N. G. et. S. V, 192 (1821).

H. pauciflorum HBK. l. c. (1821).

H. moranense HBK. l. c. (1821).

Wats. and Coult., Gray's Man. 6 ed. 95; Britt., Fl. N. J. 68; Upham, Fl. Minn. 31; Chap.. Fl. S. St. 42; Cov., Fl. Ark. 169; Wats., Bibl. Ind. I. 125; Webb., Appx. Neb. 32.

North America: N. Y. to Fla.; W. to Wis., Minn., Neb. and Ark.

Minn. valley: N. E district, and probably along N. edge; extending doubtfully to Blue Earth Co.; wet or damp woods and roadsides.

Herb.: *Ballard 825*, Page lake, Carver Co.; *Ballard 856*, Page lake; *Holzinger 32*, Winona Co.; *Bailey 428*, Long lake.

Hypericum gymnanthum ENGELM. and GRAY, Pl. Lindh. 4 (1845).

H. mutilum var. *gymnanthum* GRAY, Man. 5 ed. 86 (1867).

Wats. and Coult., Gray's Man. 6 ed. 95; Upham, Fl. Minn. 31; Britt., Fl. N. J. 68; Coult., Fl. Tex. 35; Cov., Fl. Ark. 170; Wats., Bibl. Ind. I, 127.

North America: N. J., Del. and Penn. to Minn. and Ark.; S. to Tex.

Minn. valley: N. E. district; low and shaded localities.

HERB.: *Roberts 18*, Stewart river.

Hypericum mutilum LINN. Spec. 787 (1753).

Ascyrum crux-andraea LINN. Spec. 787 (1753).
Hypericum quinquenervium WALT. Fl. Car. 190 (1788).
H. parviflorum WILLD. Spec. III, 1436 (1803).
H. stellarioides H. B. K. Nov. Gen. et. Spec. V, 196 (1821).
Brathrys quinquenervia SPACH, Ann. Sci. Nat. 2. V, 367 (1836).

Wats. and Coult., Gray's Man. 6 ed. 94; Britt., Fl. N. J. 68; Chap., Fl. S. St. 41; Upham, Fl. Minn. 31; Mac., Fl. Can. I, 85; Coult., Fl. Tex. 35; Wats., King Exp. 46; Cov., Fl. Ark. 170; Wats., Bibl. Ind. I, 127.

North America: N. S. to L. Winnipeg; E. U. S.; Tex. and Mexico; Minn. to Ark. and Eastward. Not in Neb., Colo. or Pac. coast region.

Minn. valley: Ft. Snelling and Waconia region; damp woodland.

HERB.: *Roberts 17*, Beaver bay; *Sandberg 88*, Goodhue Co.

Hypericum maculatum WALT. Fl. Car. 189 (1788).

H. virginianum WALT. Fl. Car. 189 (1788).
H. punctatum LAM. Enc. Meth. IV, 164 (1797).
H. micranthum CHOIS. Prodr. Hyper. 44 (1821).

Wats. and Coult., Gray's Man. 6 ed. 94; Britt., Fl. N. J. 68; Upham, Fl. Minn. 31; Chap., Fl. S. St. 40; Mac., Fl. Can. I, 85; Cov., Fl. Ark. 170; Wats., Bibl. Ind. I, 125.

North America: N. S., Q. to Ont.; S. to Maine, N. J., N. Car.; W. to Minn., Iowa, Mo. and Ark.

Hypericum prolificum LINN. Mant. 106 (1767).

H. foliosum JACQ. Hort. Schoen. III, 27 (1798).

Wats. and Coult., Gray's Man. 6 ed. 93; Chap., Fl. S. St. 39; Upham Fl. Minn. 31; Cov., Fl. Ark. 170; Wats., Bibl. Ind. I, 128.

North America: N. J. to Mich. and Minn.; S. to Tenn

Minn. valley: S. E. region, but doubtful; cool woods

Hypericum ascyron LINN. Spec. 1102 (1753).

H. pyramidatum AIT. Hort. Kew. III, 103 (1789).
H. ascyroides WILLD. Spec. III, 1443 (1803).
H. amplexicaule LAM. Enc. Meth. IV, 147 (1797).
H macrocarpum MICHX. Fl. II, 82 (1803).

Wats. and Coult., Gray's Man. 6 ed. 93; Upham, Fl. Minn. 30; Britt., Fl. N. J. 67; Mac., Fl. Can. I, 84, 500; II, 312; Forbes and Hems., Fl. Sin. 72; Led., Fl. Ross. I, 446; Wats., Bibl. Ind. I, 128.

Altai and Baikal Siberia and China.

North America: Montreal, Q., Ont. to plains of the Saskatchewan; S. to N. Eng., N. J., Penn., and W. to Iowa, Minn. and Dak.

Minn. valley: Forest district and wooded banks; W. to Brown Co.; wooded banks of streams and cool ravines.

HERB.: *Sheldon 1164*, New Ulm; *Kassube 33*, Tuttle's creek, Hennepin Co.; *Herb. Sheld. 1705*, Minneapolis.

Hypericum virginicum LINN. Spec. ed. 2, 1104 (1762).

H. campanulatum WALT. Fl. Car. 191 (1788).
H. emarginatum LAM. Enc. Meth. IV, 154 (1797).
Triadenum purpurascens RAF. Med. Rep. V, 355 (1809)
Elodes campanulata PURSH, Fl. Am. 379 (1814).
Elodes virginica NUTT. Gen. II, 17 (1818).

Wats. and Coult., Gray's Man., 6 ed. 95; Upham, Fl. Minn. 31; Britt., Fl. N. J. 68; Chap., Fl. S. St. 42; Mac., Fl. Can. I, 86; Wats., Bibl. Ind. I, 124; Webb., Appx. Neb. 32.

North America: N. S. to Winnipeg and Hudson Bay; S. to N. Eng. and Fla.; W. to Minn., Man. and Neb.

Minn. valley: Forest district and banks of streams; Ft. Snelling to Blue Earth Co.; marshes, swamps and wet woods.

HERB.: *Sheldon 327*, Smith's Mills, Blue Earth Co.; *Ballard 817*, Page lake, Carver Co.; *Ballard 855*, Page lake; *Ballard 902*, St. Bonifacius; *Bailey 55*, Vermilion lake; *Holzinger 33*, Winona Co.; *Roberts 19*, Duluth; *Sandberg 89*, Chisago Co.

LXXI. CISTACEAE. Rock-Rose Family.

Endlicher, *Gen. Pl.* 903 (1836–40); Bentham and Hooker, *Gen. Pl.* I, 112 (1862); Baillon, *Hist. Pl.* IV, 323 (1873).

Genera: 4; temperate N. hemisphere and a few in S. America; especially developed in Mediterranean region.

Species: 60 (B. and H.); 200 (described); Mediterranean region, 50; N. America, abundant.

HELIANTHEMUM PERS. Syst. II, 75 (1807).

Halimium, Fumana, Tuberaria, Lecheoides DUNAL, DC. Prodr. I, 266 (1824).

Rhodax, Crocanthemum, Heteromeris, Taeniostema SPACH, Ann. Sci. Nat. ser. 2, VI, 360 (1836).

Codomia GAUD. ex Durand, Ind. Phan. 23 (1888).

Fumanopsis POMEL. ex Durand, Ind. Phan. (1888).
Cistus LINN. Gen. 673 (1737) *in part*.

Baillon, *Hist. Pl.* IV, 331; Benth. and Hook., *Gen. Pl.* I, 113; Durand, *Ind. Gen. Phan.* 23; Gray, *Ill. Gen.* I, 203.

Living species: 27±; 100 (Dunal); 160 (described); principally Mediterranean region to the Punjaub, a few growing throughout Europe; 6 in N. America; 1–3, S. America; Russia, 8; Europe 59? (*Nym.*); Russian Europe, 3; Canada, 1; California, 1; S. Sts., 4; E. Sts., 2; Pl. Wheel., 1; W. Tex.; 3.

Helianthemum majus (LINN.) B. S. P. Cat. N. Y. (1888).
Lechea major LINN. Amoen. III, 11 (1751).
Cistus canadensis HILL. Veg. Syst. 14 (1769).
Helianthemum canadense MICHX. Fl. Am. I, 308 (1803).
H. ramuliflorum MICHX. Fl. Am. I, 307 (1803).
H. corymbosum PURSH, Fl. Am. 363 (1814).
H. rosmarinifolium PURSH, Fl. Am. 364 (1814).

Wats. and Coult., Gray's Man. 6 ed. 76; Britt., Fl. N. J. 53; Webb., Fl. Neb. 120; Chap., Fl. S. St. 36; Upham, Fl. Minn. 30; Mac., Fl. Can. I, 60, 491; Coult., Fl. Tex. 24; Wats., Bibl. Ind. I, 78.

North America: N. S., Ont. and Saskatchewan? S. to N. Eng., N. J. and Fla.; W. to Minn., Dak., Neb. and Tex.

Minn. valley: E. edge and S. E. districts; dry or sandy places and along river banks.

HERB.: *Holzinger 32*, Winona Co.; *Kassube 40*, Minneapolis; *Sandberg 85*, Goodhue Co.; *Holzinger 33*, Winona; *Sandberg 86*, Vasa.

HUDSONIA LINN. Mant. 1263 (1767).

Baillon, *Hist. Pl.* IV, 332; Benth. and Hook., *Gen. Pl.* I, 114; Durand, *Ind. Gen. Phan.* 23; Gray, *Ill. Gen.*. I, 207.

Living species: 3; North America; E. Sts., 2; S. Sts., 1; Canada, 2.

Hudsonia tomentosa NUTT. Gen. II, 5 (1818).
H. ericoides RICH. Frankl. Journ. 11 (1823).

Wats. and Coult., Gray's Man. 6 ed. 77; Britt., Fl N. J. 54; Upham, Fl. Minn. 30; Mac., Fl. Can. I, 60; Wats., Bibl. Ind. I, 79; Upham, Suppl. Minn. 50.

North America: N. S., N. Br,, Q., Ont., Rainy lake to Slave lake; S. to Maine, N. J. and Md.; W. around Gt. lakes to Minn. and Dak.

Minn. valley: Local; Morton; on sandy hillsides.

HERB.: *Sandberg 87*, White Rock.

LXXII. VIOLACEAE. Violet Family.

Endlicher, *Gen. Pl.* 908 (1836–40); Lindl., *Veg. King.* 365 (1846)—*Sauvagesiaceae;* Benth. and Hook., *Gen. Pl.* I, 114 (1862); Baillon, *Hist. Pl.* IV, 333 (1873).

Genera: 18–20; cosmopolitan.

Species: 250±; cosmopolitan; herbaceous in temperate, shrubby in tropical regions.

VIOLA LINN. Gen. 679 (1737).

Mnemion SPACH, Suit. Buff. V, 510 (1836).

Chrysion SPACH, l. c. 509 (1836).

Lophion SPACH, l. c. 516 (1836).

Erpetion DC. ex Sweet, Brit. Fl. Gard. 170 (1823).

Baillon, *Hist. Pl.* IV, 351; Benth. and Hook., *Gen. Pl.* I, 117; Durand, *Ind. Gen. Phan.* 23; Gray, *Ill. Gen.* I, 185.

Living species; 250 described; 150 reduced; 100 (B. and H.); three-fourths in temperate northern hemisphere, rest in southern; almost the whole earth (Durand). Russia, 40+; Europe, 56; Russian Europe, 26; N. America, 35; Calif., 15; Canada, 27–30; E. Sts., 17–19; Rocky mts., 8–10; S. Sts., 16; Pl. King, 8–9; Pl. Wheel., 4; W. Tex., 4.

Viola sylvestris LAM. Fl. Fr. II, 680 (1778).

V. uliginosa MUHL. Cat. 25 (1813).

V. debilis PURSH. Fl. Am. 174 (1814).

V. muhlenbergiana GINGINS, DC. Prodr. I, 297 (1824).

V. muhlenbergii TORR. Fl. U. S. I, 256 (1824).

V. canina var. *sylvestris* REGEL, Fl. O.-Sib. I, 245 (1862).

V. canina var. *muhlenbergii* TRAUTV. Fl. Sib. 28 (1877).

Wats. and Coult., Gray's Man. 6 ed. 81; Britt., Fl. N. J. 57; Upham, Fl. Minn. 29; Chap., Fl. S. St. 34; Brew. and Wats., Fl. Calif. 56; Mac., Fl. Can. I, 63; Led., Fl. Ross. I, 253; Herd., Fl. Russ. Eur. 22; Roth., Wheel. Exp. 68; Wats., Bibl. Ind. I, 82; Forbes and Hems., Fl. Sin. 55.

Russian Europe; Siberia to Baikals, Amur., Kamtka, China.

North America: Greenland to Alaska; S. thro. Can. to N. Eng., N. J. and Va.; W. to Minn., Dak. and Colo.

Minn. valley: N. E. and N. edge; forest region and in tamarack swamps.

HERB.: *Sheldon 1605*, Ramsey Co.

Viola striata AIT. Hort. Kew. III, 290 (1789).

V. debilis MICHX. Fl. I, 150 (1803).

V. lewisiana GING. DC. Prodr. I, 298 (1824).

V. ochroleuca SCHW. Am. Journ. Sci. I, 5, 66 (1824).

Wats. and Coult., Gray's Man. 6 ed. 80; Britt., Fl. N. J. 57; Chap., Fl. S. St. 34; Upham, Fl. Minn. 29; Mac., Fl. Can. I, 63; Wats., Bibl. Ind. I, 87.

North America: Ont. and N. Eng. to mts. of Ga.; W. to Minn. and Mo.

Minn. valley: N. edge and to the W. edge on higher levels; flat and wooded grounds.

HERB:: *Bradley 1*, Spring Park; *Herb. Wickersheim 21*, Ash lake, Lincoln Co.

Viola canadensis LINN. Spec. 936 (1753).

V. albiflora LINK, Enum. Hort. Berol. I, 141 (1828).

Wats. and Coult , Gray's Man. 6 ed. 80; Britt., Fl. N. J. 57; Chap., Fl. S. St. 34; Webb., Fl. Neb. 119; Upham, Fl. Minn. 29; Coult., Fl. Colo. 29; Mac., Fl. Can. I, 64; Led., Fl. Ross. I, 254; Roth., Wheel Exp. 68; Wats., King. Exp. 35; Wats., Bibl. Ind. I, 82.

Islands in Berings st. off Siberia.

North America: Newf., N. Br., Q., Ont., Man. to Brit. Col.; S. in mts. to Wyom., Colo., Utah, Nev. and N. Mexico; E. to Alleghanies and N. Car.

Minn. valley: Forest region and wooded banks of streams; W. to Chippewa river; low and damp localities; woods.

HERB.: *Taylor 422*, Janesville; *Sheldon 290*, Madison Lake; *Sheldon 1606*, Ft. Snelling; *Sheldon 256*, Turtle lake, Le Sueur Co.; *Sandberg 82*, Red Wing; *Herb. Moyer 37*, Montevideo.

Viola pubescens AIT. Hort. Kew. III, 290 (1789).

V. pennsylvanica MICHX. Fl. N. Am. II, 149 (1803).

V. uniflora var. *pubescens* REGEL, Fl. O.-Sib. I, 254 (1862).

Wats. and Coult., Gray's Man. 6 ed. 80; Chap., Fl. S. St. 34; Britt., Fl. N. J. 57; Upham, Fl. Minn. 29; Mac., Fl. Can. I, 64; Cov., Fl. Ark. 167; Wats., Bibl. Ind. I, 86.

East Siberia?

North America: N. S., N. Br., Q., Ont. to Man.; S. to N. Eng. and Va.; W. to Iowa, Minn. and Ark.

Minn. valley: Throughout; woods and shady banks; common; principally in the forest region.

HERB.: *Ballard 331*, Belle Plaine; *Bailey 236*, Vermilion lake; *Sandberg 83*, Red Wing; *Herrick 45*, Minneapolis; *Kassube 39*, Minneapolis; *Leonard 8*, Minneapolis; *Holzinger 31*, Winona Co.; *Sandberg 84*, Cannon Falls; *Hammond 10*, Lake City; *Herb. Sheldon 1834*, Minneapolis; *Herb. Wickersheim 22*, Idlewild, Lincoln Co.; *Herb. Moyer 38*, Montevideo.

Viola rotundifolia MICHX. Fl. N. Am. II, 150 (1803).

Wats. and Coult., Gray's Man. 6 ed. 80; Britt., Fl. N. J. 56; Chap., Fl. S. St. 34; Upham, Fl. Minn. 28; Mac., Fl. Can. I, 61; Led., Fl. Ross. I, 248; Wats., Bibl. Ind. I, 86.

Kamtschatka?

North America: N. S. and Maine to N. Car. and Minn

Minn. valley: Ft. Snelling and probably Leaf hills district; moist woodland and near cold springs.

HERB.: *Roberts 14,* Black Point; *Roberts 15,* Black Neck river.

Viola lanceolata LINN. Spec. 934 (1753).

V. attenuata SWEET, Hort. Brit. 37 (1827).

Wats. and Coult., Gray's Man. 6 ed. 80; Britt., Fl. N. J. 56; Chap., Fl. S. St. 33; Upham, Fl. Minn. 29; Mac., Fl. Can. I, 61, 492; Coult., Fl. Tex. 25; Wats., Bibl. Ind. I, 84; Upham, Suppl. Minn. 50.

North America: N. S., N. Br., Ont. to L. Superior; S. to Fla.; W. to Minn. and Tex.

Minn. valley: Ft. Snelling; N. W. and probably along N. edge; damp woods.

Viola primulaefolia LINN. Spec. 934 (1753).

V. acuta BIGEL. Fl. Bost. 100 (1824).

Wats. and Coult., Gray's Man. 6 ed. 80; Britt., Fl. N. J. 56; Chap., Fl. S. St. 33; Upham, Fl. Minn. 29; Mac., Fl. Can. I, 61; Wats., Bibl. Ind. I, 86.

North America: N. Br., Q., to N. Eng., N. J. and Fla.; W. to Minn.?

Minn. valley:? Ft. Snelling and possibly in Blue Earth Co.; damp woods.

Viola blanda WILLD. Hort. Berol. t. 24 (1807).

V. clandestina PURSH, Fl. Am. 173 (1814).

V. obliqua PURSH, Fl. Am. 172 (1814) *not Hill.*

Wats. and Coult., Gray's Man. 6 ed. 79; Britt., Fl. N. J. 56; Upham, Fl. Minn. 29; Chap., Fl. S. St. 33; Brew. and Wats., Fl. Calif. I, 55; Regel, Fl. O.-Sib. I, 216, 234; Led., Fl. Ross. I, 247; Mac., Fl. Can. I, 62; Cov., Fl. Ark. 167; Wats., Bibl. Ind. I, 81.

Kamtschatka.

North America: Newf. and N. S. to Man. and Brit. Col.; Ft. Franklin on Mackenzie river; S. in E. U. S. to N. Car.; W. to Minn., Mo. and Ark.

Minn. valley: Forest district and N. edge; woods and damp places; tamarack swamps.

HERB.: *Sheldon 329,* Smith's Mill, Blue Earth Co.; *Ballard 157,* Chaska; *Herrick 44,* Lake Mendoza; *Sandberg 74,* Chisago lake; *Herrick 45,* Minneapolis; *Bailey 455,* Mud Lake; *Sandberg 75,* Red Wing; *Herb. Sheld. 1718,* Minneapolis; *1838,* Lake Calhoun; *Herb. Wickersheim 19,* Mankato.

Viola blanda WILLD. var. **amoena** (LECONTE) B. S. P. Cat. N. Y. (1888).

V. amoena LECONTE, Ann. Lyc. N. Y. II, 144 (1835).

V. blanda var. *palustriformis* A. GRAY, Rev. Viol. Bot. Gaz. (1886).

Wats. and Coult., Gray's Man. 6 ed. 79; Britt., Fl. N. J. 56; Wats., Bibl. Ind. I, 82; Mac., Fl. Can. II, 307.

North America: N. Y., N. J. and Ont. to Del. and W. to Lake Nepigon and Minn.

Minn. valley: Forest district; wet woods and tamarack swamps.

HERB.: *Ballard 366*, Helena, Scott Co.; *Bailey 105*, Vermilion lake; *Sheldon 1837*, Lake Calhoun.

Viola sagittata AIT. Hort. Kew. III, 287 (1789).

V. sagittaefolia SALISB. Prodr. 130 (1796).
V. ciliata MUHL. Cat. 25 (1813).
V. dentata PURSH, Fl. Am. 172 (1814).
V. ovata NUTT. Gen. I, 148 (1818).
V. alleghaniensis R. and S. Syst. V, 560 (1819).

Wats. and Coult., Gray's Man. 6 ed. 79; Britt., Fl. N. J. 56; Upham, Fl. Minn. 29; Chap., Fl. S. St. 33; Mac., Fl. Can I, 63, 492; Cov., Fl. Ark. 167; Wats., Bibl. Ind. 87.

North America: N. S., N. Br., Q., Ont. to N. Eng. and Minn.; S. to N. J., Va. and Tenn.; W. to Mo. and Ark.

Minn. valley: Ft. Snelling to Blue Earth Co.; N. edge of valley to Leaf hill district; drier exposed hillsides.

HERB.: *Sandberg 80*, Belle Creek, Goodhue Co.; *Kassube 37*, Minneapolis; *Herrick 46*, Minneapolis; *Herb. Sheld. 1680*, Minneapolis; *1833*, Minneapolis; *Sheldon 1930*, Minneapolis.

Viola palmata LINN. Spec. 933 (1753).

V. heterophylla MUHL. Cat. 25 (1813).
V. cucullata var. *palmata* GRAY, Man. 5 ed. 78 (1867).

Wats. and Coult., Gray's Man. 6 ed. 79; Britt., Fl. N. J. 55; Webb., Fl. Neb. 120; Chap., Fl. S. St., 33; Upham, Fl. Minn. 29; Mac., Fl. Can. I, 63; Cov., Fl. Ark. 167; Wats., Bibl. Ind. I, 84.

North America: Ont. and E. U. S.; S. to Fla.; W. to Minn., Neb., Kan. and Ark.

Minn. valley: Throughout at lower levels; damp ground; woodland and meadow.

HERB.: *Holzinger 27*, Winona Co.; *Holzinger 28*, Winona Co.; *Sandberg 73*, Vasa; *Herb. Sheld. 1832*, Minneapolis; *Herb. Moyer 34*, Macmillan's gulch, Montevideo.

Viola palmata LINN. var. **obliqua** (HILL) HITCHCOCK, Fl. Ames. 487 (1891).

V. obliqua HILL. Hort. Kew. 316 t. 12 (1768).
V. cucullata AIT. Hort. Kew. III, 228 (1789).
V. papilionacea PURSH, Fl. Am. 173 (1814).
V. asarifolia PURSH, Fl. Am. 732 (1814) *not Muhl.*
V. palmata var. *cucullata* GRAY, Rev. Viol. Bot. Gaz. (1886).

Wats. and Coult., Gray's Man. 6 ed. 79; Webb., Fl. Neb. 120; Upham, Fl. Minn. 29; Chap., Fl. S. St. 33; Britt., Fl. N. J. 55; Mac., Fl. Can. I, 62;

II, 307; Coult., Fl. Tex. 25; Wats., King Exp. 34; Roth., Wheel. Exp. 68; Cov., Fl. Ark. 167; Wats., Bibl. Ind. I, 83.

North America: Atl. to Pac. in Canada; range in U. S. like that of *V. palmata* Linn.; Texas, Rio Grande river; S. Calif.; Arizona.

Minn. valley: Throughout on lower levels; banks of streams, wooded hillsides and lake shores.

HERB.: *Taylor 756,* Glenwood; *Kassube 36,* Minneapolis; *Sandberg 77,* Vasa; *Oestlund 16,* Minneapolis; *Leonard 7,* Minneapolis; *Sandberg 78,* Red Wing; *Holzinger 29,* Winona Co.; *Herb. Sheld. 1825,* Minneapolis; *1836,* Ramsey Co.; *Herb. Wickersheim 20,* Idlewild, Lincoln Co.; *Herb. Moyer 35,* Montevideo.

Viola palmata LINN. var. **cordata** (WALT.) B. S. P. Cat. N. Y. (1888).

V. cordata WALT. Fl. Car. 219 (1788).
V. villosa WALT. Fl. Car. 219 (1788).
V. sororia WILLD. Enum. 263 (1809).
V. barbata MUHL. Cat. 25 (1813).
V. ciliata R. and S. Syst. V, 360 (1819).
V. cucullata var. *cordata* GRAY, Man. 5 ed. 78 (1867).

Wats. and Coult., Gray's Man. 6 ed. 79; Britt., Fl. N. J. 56; Upham, Fl. Minn. 29; Mac., Fl. Can. I, 63; Cov., Fl. Ark. 167; Wats., Bibl. Ind. I, 83; Chap., Fl. S. St. 33.

North America: Ont. and E. U. S. to Fla.; W. to Minn., Dak., Neb., Kan., Mo. and Ark.

Minn. valley: Probably throughout, but most certainly in forest region, E. and to Nicollet Co.; exposed hillsides.

HERB.: *Sandberg 79,* Red Wing.

Viola pedatifida G. DON, Mill. I, 320 (1831).

V. delphinifolia NUTT. T. and G. Fl. I, 136 (1838).

Wats. and Coult., Gray's Man. 6 ed. 79; Upham, Fl. Minn. 29; Webb., Fl. Neb. 120; Coult., Fl. Colo. 29; Mac., Fl. Can. I, 493; Cov., Fl. Ark. 167; Wats., Bibl. Ind. I, 84.

North America: Ill. to Kan., Ark., Neb., Colo., Dak. and Minn.; S. in mts. to Arizona; N. to prairies of Man.

Minn. valley: Prairie region throughout; apparently less abundant than *V. pedata* Linn.; rich meadow land.

HERB.: *Kassube 35,* Minneapolis; *Sandberg 76,* Red Wing; *Herb. Moyer 36,* Montevideo.

Viola pedata LINN. Spec. 933 (1753).

V. digitata PURSH, Fl. Am. 171 (1814).
V. pinnata RICH. Frankl. Journ. 6 (1823).

Wats. and Coult., Gray's Man. 6 ed. 78; Britt., Fl. N. J. 55; Chap., Fl.

S. St. 33; Upham, Fl. Minn. 29; Mac., Fl. Can. I, 63, 492; Cov., Fl. Ark. 167; Wats., Bibl. Ind. I, 85.

North America: Lat. 53° N. on Saskatchewan; N. Eng. to Minn.; S. to N. J., Tenn., Mo. and Ark.

Minn. valley: Ft. Snelling to Brown Co. and along N. edge; rich prairies or drift-covered hillsides.

HERB.: *Sheldon 969,* Sleepy Eye; *Kassube 38,* St. Anthony Park; *Oestlund 17,* Hennepin Co.; *Sandberg 81,* Red Wing; *Holzinger 30,* Winona Co.; *Herb. Sheld. 1836,* Minneapolis.

LXXIII. CACTACEAE. Cactus Family.

Endlicher, *Gen. Pl.* 942 (1836-40), Bentham and Hooker, *Gen. Plant.* I, 845 (1868); Baillon, *Hist. Pl.* IX, 28 (1888).

Genera: 13; tropical and sub-tropical America; extending to Canada and Central Chile; 1 in Africa, Madagascar and Mauritius.

Species: 1000±; almost all confined to desert places.

OPUNTIA MILL. Dict. ed. 8 (1768).

Cactus LINN. Gen. ed. VI, 616 (1764) *in part.*
Tuna DILL. Hort. Elth. 383 (1774).
Consolea LEMAIRE, ex Durand, Ind. Gen. Phan. 153 (1888).

Baillon, *Hist. Pl.* IX, 40; Benth. and Hook. *Gen. Pl.* I, 851; Durand, *Ind. Gen. Phan.* 153..

Living species: 200 described; tropical and warmer America, 1 sp. in old world. Perhaps only 30 distinct; W. Tex., 19; E. Sts., 4; Canada, 4; Rocky mts., 6; S. Sts., 4; California, 14-17; Pl. Wheel, 13; Pl. King, 11.

Opuntia fragilis (NUTT.) HAW. Syn. Succ. Suppl. 82 (1819).

Cactus fragilis NUTT. Gen. I, 296 (1818).

Wats. and Coult., Gray's Man. 6 ed. 197; Webb., Fl. Neb. 125; Upham, Fl. Minn. 59; Coult., Fl. Colo. 112; Mac., Fl. Can. I, 532; Wats., King. Exp. 119; Wats., Bibl. Ind. I, 406.

North America: Vancouver to Brit. Col. and S. Man.; Upper Missouri and Yellowstone to N. Mex.; E. to Minn., Wisc., Iowa, Neb. and Kan.

Minn. valley: S. W. district; rocks and ledges or dry hillsides, New Ulm? to Dakota line.

HERB.: *Sheldon 1494,* Pipestone City; *Sheldon 958,* Redwood Falls.

Opuntia missouriensis DC. Prodr. III, 472 (1828).

Cactus ferox NUTT. Gen. I, 296 (1818) *not Willd.*
Opuntia polyacantha HAW. Syn. Succ. Suppl. 82 (1819).

Wats. and Coult., Gray's Man. 6 ed. 197; Mac., Fl. Can. I, 177; Webb., Fl. Neb. 125; Coult., Fl. Colo. 111; Upham, Fl. Minn. 59; Wats., King Exp. 118; Roth., Wheel. Exp. 129; Cov., Fl. Ark. 184; Wats., Bibl. Ind. I, 407.

North America: Colo. and Mont. to Neb., Minn., Kan., Ark., Mo. and Wisc.

Minn. valley: S. W. edge; ledges of quartzite or syenitic rock; rare.

HERB.: *Sheld. 1495*, Pipestone City; *Huntington 27*, Rock Co.

Opuntia rafinesquii ENGELM. Pac. R. R. Rep. IV, 41 (1856).

Cactus opuntia TORR. Fl. U. S. 466 (1824) *in part.*

Opuntia mesacantha and *caespitosa* RAF. Bull. Bot. (1830).

Wats. and Coult., Gray's Man. 6 ed. 197; Webb., Fl. Neb. 125; Upham, Fl. Minn. 59; Coult., Fl. Col. 111; Cov., Fl. Ark. 184; Coult., Fl. Tex. 135; Wats., Bibl. Ind. I, 408.

North America: Ont. to Nantucket, N. J. and Fla.; Mississippi valley; Mich., Minn. to Neb., Kan., Ky., Ark., Colo. and W. Tex.

Minn. valley: Central S. district, on ledges of rock in bed of river Warren; New Ulm to Dakota line.

HERB.: *Sheldon 1204*, Redstone, near New Ulm.

LXXIV. THYMELAEACEAE. Mezereum Family.

Lindl. *Veg. King* 530 (1846); Baillon, *Hist. Pl.* VI, 100 (1877); Endlicher, *Gen. Pl.* 329, 332 (1836-40)—*Daphnoideae* and *Aquilarineae;* Bentham and Hooker, *Gen. Plant.* III, 186 (1880).

Genera: 37±; temperate regions, especially abundant in Australia, S. Africa and Mediterranean region.

Species: 375±, living; 30–40 fossil in Tertiary rocks.

DIRCA LINN. Diss. Chenon. (1751), Gen. V, 437 (1754).

Dofia ADANS. Fam. II, 285 (1763).

Baillon, *Hist. Pl.* VI, 130; Benth. and Hook. *Gen. Pl.* III, 191; Durand, *Ind. Gen. Phan.* 354.

Living species: 1–2; E U. S. and California.

Dirca palustris LINN. Amoen. III, 12 (1756).

Wats. and Coult., Gray's Man. 6 ed. 448; Britt., Fl. N. J. 213; Mac., Fl. Can. I, 420; Chap., Fl. S. St. 395; Upham, Fl. Minn. 121; Cov., Fl. Ark. 217.

North America: N. Br., Q., Ont. to Owen Sound; S. to Fla.; W. to Minn., Mo., Neb.? and Ark.

Minn. valley: Forest district and N. edge; banks of streams and low thickets.

HERB.: *Sheldon 1611*, Ramsey Co.; *Sandberg 485*, Vasa; *Herb. Sheld. 1903*, Ramsey Co.; *Herb. Wickersheim 113*, Mankato.

LXXV. ELAEAGNACEAE. Oleaster Family.

Endlicher, *Gen. Pl.* 333 (1836-40); Bentham and Hooker, *Gen. Plant.* III, 203 (1880); Baillon, *Hist. Pl.* II, 487 (1870).

Genera: 3; temperate N. hemisphere and S. in Asia, Phillipines and to Australia.

Species: 16; 12 in Elaeagnus (B. and H.); ?10± fossil from Tertiary rocks.

LEPTARGYRAIA RAF. Am. Mo. Mag. II, 176 (Jan. 1818).

Shepherdia NUTT. Gen. II, 240 (later, 1818).

Benth and Hook., *Gen. Pl.* III, 204; Durand, *Ind. Gen. Phan.* 356; Schenck, *Palaeophyt.* 649; O. Kuntze, *Rev. Gen.* II, 585.

Living species: 3; N. America; 1, mts. of S. Utah; 1, Canada and Brit. Col.; 1, E. Sts.

Leptargyraia argentea (NUTT.) GREENE, Pittonia II, 122 (1890).

Eleagnus argentea NUTT. Fras. Cat. (1813).

Hippophae argentea PURSH, Fl. Am. I, 113 (1814).

Shepherdia argentea NUTT. Gen. II, 240 (1818).

Wats. and Coult., Gray's Man. 6 ed. 449; Webb., Fl. Neb. 127; Wats., Fl. Calif. II, 62; Coult., Fl. Colo. 322; Upham, Fl. Minn. 121; Mac., Fl. Can. I, 422; Wats., King Exp. 318.

North America: Saskatchewan and Assiniboia to Minn., Neb., Kan., N. Mex. and W. to Sierra Nevada mts.

Minn. valley: In small numbers along the extreme W. edge, in Dakota; extending into Minn. near Brown's valley; high sheltered slough edges and thickets.

ELAEAGNUS LINN. Gen. 84 (1737).

Octarillum LOUR. Cochinch. 90 (1790).

Benth. and Hook. *Gen. Pl.* III, 204; Durand, *Ind. Gen. Phan.* 356; Schenck, *Palaeophyt.* 649.

Living species: 27–30 described; 12 reduced; S. Europe; temperate and tropical Asia, Australia and N. America. Europe, 1; Russia, 1; N. America, 1.

Fossil species: *Elaeagnaceae* described from Tertiary of Bonn, Spitzbergen and Greenland (*Heer*).

Elaeagnus argentea PURSH, Fl. Am. 114 (1814).

E. commutata BERNH. Thur. Allge. Gartenz, II, 95 (1819?).

Wats. and Coult., Gray's Man. 6 ed. 449; Mac., Fl. Can. I, 420; Upham, Fl. Minn. 121; Coult., Fl. Colo. 321; Wats., King Exp. 318; Roth., Wheel Exp. 238.

North America: Isle of Orleans, Man., L. Nipigon and Assiniboia to Rocky mts.; N. to L. Athabasca and 56° N. lat. to 69° N. lat. in Rockies; Hudson Bay and Arctic circle; S. to Mon., Colo., Utah and E. to Minn. and Dak.

Minn. valley: Local on the upper Pomme des Terres river; thickets, riverbanks and edges of sloughs.

LXXVI. LYTHRACEAE. Loosestrife Family.

Endlicher, *Gen. Pl.* 1198 (1836-40); Bentham and Hooker, *Gen. Plant.* I, 773 (1862-1867): Baillon, *Hist. Pl.* VI, 426 (1877); Koehne, *in Engler and Prantl, Nat. Pflanz.* 3, VII, 8 (1892).

Genera: 22; tropical regions, sparingly extended into the N. and S. temperate zones; principally in W. hemisphere.

Species: 360; 1-2 doubtful fossils from Pliocene.

LYTHRUM LINN. Gen. 387 (1737).

Salicaria TOURN. Inst. 253 (1700).
Anisotes LINDL. Intr. Nat. Syst. ed. II, 101 (1835).
Pentaglossum FORSK. Fl. Aeg. Arab. 11 (1775).
Mozula RAF. Jour. Phys. LXXXIX, 96 (1819).
Pythagorea RAF. Jour. Phys. LXXXIX, 96 (1819).
Bergenia NECK. Elem. (1790).
Middendorfia TRAUTV. ex Durand, Ind. Gen. Phan. 139 (1888).

Baillon, *Hist. Pl.* VI, 446; Benth. and Hook., *Gen. Pl.* I, 779; Durand, *Ind. Gen. Phan.* 139; Engler and Prantl, *Nat. Pflanz.* 3, VII, 8 (Koehne).

Living species: 23: cosmopolitan. Europe, 10; Asia, 10; Russia, 9; Russian Europe, 7; North America, 4 or 5: W. Tex., 3; California, 4; Rocky mts., 1; Canada, 2; S. Sts., 2; E. Sts., 3; Pl. Wheel., 1; Africa, 8; all America, 12; Australia, 2.

Lythrum alatum PURSH, Fl. Am. 334 (1814).

Pythagorea alata RAF. Journ. Phys. 96 (1819).
Lythrum kennedyanum HBK. Nov. Gen. et. Spec. VI, 194 (1823).

Wats. and Coult., Gray's Man. 6 ed. 185; Britt., Fl. N. J. 107; Mac., Fl. Can. I, 175, 532; Webb., Fl. Neb., 127; Chap., Fl. S. St., 134; Brew. and Wats., Fl. Calif. I, 214; Coult., Fl. Colo. 100; Upham, Fl. Minn. 58; Coult., Fl. Tex. 112; Roth., Wheel. Exp. 120; Cov., Fl. Ark. 183; Wats., Bibl. Ind. I, 361.

North America: Ont. to N. Eng., N. J., Ga. and Fla.; W. to Minn., Neb., Colo., Ark. and S. W. Tex.

Minn. valley: Throughout; local or infrequent; damp meadows or bases of hills.

HERB.: *Sheldon 790*, Sleepy Eye; *Taylor 572*, Minnesota lake; *Kassube 97*, Minneapolis; *Herrick 119*, Minneapolis; *Sandberg 211*, Cannon Falls; *Herb. Moyer 88*, Montevideo.

LXXVII. OENOTHERACEAE. Evening-Primrose Family.

Endlicher, *Gen. Pl.* 1118 (1836–40); Lindl., *Veg. King.* 724 (1846)—*Onagraceae;* Bentham and Hooker, *Gen. Plant,* I, 785 (1862–1867); Baillon, *Hist. Pl.* VI, 458 (1877)—excl. *Halorrhagidaceae.*

Genera: 16–20; temperate regions; rarer in the tropics.

Species: 300–350; a few fossil in Tertiary.

ISNARDIA Linn. Gen. 842 (1737).

Ludwigia Linn. Corr. 943 (1737).
Prieuria DC. Prodr. III, 58 (1828).
Nematopyxis Miq. Fl. Ind. Bat. I, 630 (1859).
Dantia Thou. Gen. Nov. Mad. 49 (1806?).
Jussiaea Linn. Gen. 538 (1737).
Cubospermum Lour. Fl. Coch. 275 (1790).
Vigiera Velloz. Fl. Flum. II, 73, 74 (1827).
Corynostigma Persl, Epim. 218 (1844).

Baillon, *Hist. Pl.* VI, 491; Benth. and Hook., *Gen. Pl.* I, 788; Durand, *Ind. Gen. Phan.* 140; O. Kuntze, *Rev. Gen.* I, 250.

Living species: 60±; Europe, Asia, Africa, N. America, and most tropical regions. North America, 24; S. Sts., 20; E. Sts., 10; Canada, 2–3; California, 2.

Isnardia palustris Linn. Spec. 120 (1753).

Ludwigia apetala Walt. Fl. Car. 89 (1788).
L. nitida Michx. Fl. N. Am. I, 87 (1803).
L. palustris Ell. Sk. I, 211 (1821).
Isnardia palustris var. *americana* DC. Prodr. III, 61 (1828).

Wats. and Coult., Gray's Man. 6 ed. 188; Britt., Fl. N. J. 109; Mac., Fl. Can. I, 168; Chap., Fl. S. St. 142; Hook., Fl. Gt. Brit. 158; Upham, Fl. Minn. 58; Webb., Fl. Neb. 126; Brew. and Wats., Fl. Calif. I, 217; Coult., Fl. Tex. 113; Cov., Fl. Ark. 183; Wats., Bibl. Ind. I, 375; Greene, Fl. Fran. 227.

Europe; S. Africa; W. Asia.

North America: N. S., N. Br., Q., Ont. to Saskatchewan; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Ark. and W. Tex.; also, Sierra Co., Calif., and Oregon.

Minn. valley: Forest district to Blue Earth Co.; rare; swamps and low meadows.

Isnardia polycarpa (Short and Peter) OK. Rev. Gen. I, 251 (1891).

Ludwigia polycarpa S. and P. Suppl. Pl. Ky. II, 7 (1833).

Wats. and Coult., Gray's Man. 6 ed. 188; Webb., Fl. Neb. 126; Upham, Fl. Minn. 58; Cov., Fl. Ark. 183; Wats., Bibl. Ind. I, 376.

North America: Mass. and Conn. to Mich., Minn., Neb., Kan., Ark. and Ky.

Minn. valley: Reported from N. E. district; low meadows and swamps.

HERB.: *Manning 4*, Lake City.

GAURA LINN. Diss. Chen. 1111 (1751); Gen. ed. V, 425 (1754).

Schizocarya SPACH, Ann. Mus. IV, 325 (1835).
Gauridium SPACH, Suit. Buff. IV, 379 (1839).
Stenosiphon SPACH, Ann. Mus. IV, 326 (1835).
? **Heterogaura** ROTH. Proc. Am. Acad. VI. 354 (1864).
? **Gongylocarpus** CHAM. and SCHLECHT. Linn. V, 557 (1831).

Baillon, *Hist. Pl.* VI, 493; Benth. and Hook., *Gen. Pl.* I, 793; Durand, *Ind. Gen. Phan.* 141.

Living species: 20–25; warmer N. America and Mexico. W. Tex., 9–10; Canada, 2; Rocky mts., 4; E. Sts., 4; California, 2–3; S. Sts., 3; Pl. Wheel., 6–7; Pl. King, 2.

Gaura coccinea NUTT. Fras. Cat. (1813).

G. marginata LEHM. Hook. Fl. Bor.-Am. I, 208 (1833).
G. glabra LEHM. Hook. Fl. Bor.-Am. I, 208 (1833).
Schizocarpa (?) *crispa* SPACH, Monog. Onag. 58 (1838).

Wats. and Coult., Gray's Man. 6 ed. 193; Mac., Fl. Can. I, 174; Coult., Fl. Colo. 106; Webb., Fl. Neb. 126; Roth., Wheel. Exp. 40; Upham, Fl. Minn. 57, Suppl. 51; Cov., Fl. Ark. 183.

North America: Red and Saskatchewan valleys to Rocky mts., S. to Mont. and Colo.; E. to Minn., Neb., Kan. and Ark.

Minn. valley: W. district from Chippewa valley; high plains and knolls.

HERB.: *Wickersheim 3*, Idlewild, Lincoln Co.; *Sheldon 1384*, Lake Benton; *Herb. Moyer 87*, Montevideo.

Gaura biennis LINN. Spec. 347 (1753).

Pleurandra alba RAF. Fl. Lud. 95 (1817).
Pleurostemon album RAF. Adn. (1820).

Wats. and Coult., Gray's Man. 6 ed. 192; Chap., Fl. S. St. 138; Britt., N. J. 110; Upham, Fl. Minn. 57; Webb., Fl. Neb. 126; Coult., Fl. Colo. 106; Wats., Bibl. Ind. I, 368; Mac., Fl. Can. I, 174, 521.

North America: Ont., N. Y., and N. J. to Ga. and Tenn.; W. to Minn., Dak., Idaho and Neb.; S. to Mo. and Ark.

Minn. valley: Reported from S. E. district, but possibly not in the valley; banks and hillsides.

EPILOBIUM LINN. Gen. 319 (1737).

Chamoenerium TAUSCH, Hort. Canal. I (1823).
Lysimachion TAUSCH, l. c. (1823).
Crossostigma SPACH, Ann. Mus. IV, 328 (1835).

Baillon, *Hist. Pl.* VI, 492; Benth. and Hook. *Gen. Pl.* I, 787; Durand, *Ind. Gen. Phan.* 140.

Living species: 60; all temperate and colder regions; New Zealand. Russia, 20; Europe, 18; Russian Europe, 17; North America, 38; Canada, 26; Pac. region, 34; E. Sts., 10; Central Calif., 17.

Epilobium hornemanni RCHB. Icon. Crit. II, 73 (1824).

E. origanifolium LAM. Enc. Meth. II, 376 (1786).
E. anagallidifolium AUCT. AMER. *in part.*
E. alpinum GRAY, Man. 5 ed. (1869).

Wats. and Coult., Gray's Man. 6 ed. 189; Upham, Fl. Minn. 57; Mac., Fl. Can. I, 169, 530?; Hook., Fl. Gt. Brit. 158; Coult., Fl. Colo. 102; Brew. and Wats., Fl. Calif. I, 219; Led., Fl. Ross. II, 111, 112; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 50; Trelease, Monog. Epilob. 105; Roth., Wheel. Exp. 361; Wats., King. Exp. 103? *in part?;* Wats., Bibl. Ind. I, 365; Hart., Fl. Scand. I, 263; Webb., Appx. Neb. 34; Greene, Fl. Fran. 208.

Russian Europe to N. W. Asia; Arctic Europe.

North America: Greenland, Labrador, Q. to Rocky mts., Selkirks, Alaska and Cape Chudleigh.—to lat. 56° N.; S. to White mts.; S. to Minn. and Wisc.; S. in Rockies to Mont., Colo. and Utah; S. in Pac. reg. to Oregon, Calif. and Idaho.

Minn. valley: Forest district, Ft. Snelling to Blue Earth Co.; rare; woods and along streams.

HERB.: *Leiberg 19*, Minneopa Falls, Blue Earth Co.

Epilobium coloratum MUHL. Willd. Enum. I, 411 (1809)

E. divaricatum RAF. Prec. Decouv. 41 (1814).
E. tetragonum PURSH, Fl. Am. 259 (1814).

Wats. and Coult., Gray's Man. 6 ed. 189; Coult., Fl. Colo. 102; Mac., Fl. Can. I, 170, 530; Upham, Fl. Minn. 57; Webb., Fl. Neb. 126; Chap., Fl. S. St., 140; Brew. and Wats., Fl. Calif. I, 219; Britt., Fl. N. J. 109; Trelease, Monog. Epilob. 93; Wats., King. Exp. 103; Roth., Wheel. Exp. 120, 361; Cov., Fl. Ark. 183; Wats., Bibl. Ind. I, 364.

North America: Newf., N. S., N. B., Q., Ont. to Sasatchewan, N. W. T. and Rocky mts.; S. to N. Eng., N. J., S. Car.; W. to Minn., Neb., Kan., Ark. and Dak.

Minn. valley: Throughout; high wet places and along streams.

HERB.: *Taylor 411*, Buffalo lake, Waseca Co.; *Ballard 119*, Chaska; *Taylor 847*, Glenwood; *Ballard 476*, Prior's lake, Scott Co.; *Taylor 953*, Glenwood; *Sheldon 877*, Sleepy Eye; *Taylor 1079*, Glenwood; *Taylor 698*, Minnesota lake; *Ballard 752*, Waconia; *Kassube 94*, Minneapolis; *Herrick 114*, Minneapolis; *Bailey 157*, Vermilion lake; *Holzinger 81*, Stockton; *Bailey 461*, Agate bay; *Holzinger 82*, Winona Co.; *Herrick 115*, Minneapolis; *Oestlund 61*, Minneapolis; *Bailey 576*, Agate bay; *Sandberg 207*, Goodhue Co.

Epilobium strictum MUHL. Cat. 39 (1813).

E. molle TORR. Fl. U. S. 393 (1824).

Wats. and Coult., Gray's Man. 6 ed. 189; Upham, Fl. Minn. 57; Mac., Fl. Can. I, 171; Britt., Fl. N. J. 109; Trelease Monog. Epilob. 87; Wats., Bibl. Ind. I, 365.

North America: N. S., Q., Ont. to L. Athabasca; S. to Maine, N. Y., N. J., Penn. and Va.; W. to Ohio, Ills., Mich., Wisc. and Minn.

Minn valley: Forest district; Ft. Snelling to Blue Earth Co.; infrequent; bogs and edges of marshes.

HERB.: *Ballard 798*, Goose lake, Carver Co.; *Ballard 843*, Patterson lake, Carver Co.; *Ballard 895*, St. Bonifacius; *Ballard 724*, Benton, Carver Co.; *Leiberg 21*, Blue Earth Co.

Epilobium palustre LINN. Spec. 348 (1753).

E. anagallidifolium AUCT. AMER. *in part.*

E. oliganthum MICHX. Fl. N. Am. 1, 223 (1803) *in part.*

E. palustre var. *lineare* GRAY, Man. 2 ed. 130 (1852) *in part.*

? *E. palustre* var. *oliganthum* B. S. P. Cat. N. Y. (1888) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 190; Upham, Fl. Minn. 57; Britt., Fl. N. J. 108?; Trautv., Fl. Sib. in var. 55; Coult., Fl. Colo. 102; Mac., Fl. Can. I, 170; Hook., Fl. Gt. Brit. 157; Chap., Fl. S. St. 140?; Forbes and Hems., Fl. Sin. 308; Led., Fl. Ross. II, 109; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 50; Wats., Bibl. Ind. I, 366; Trelease, Monog. Epilob. 88; Hart., Fl. Scand. I, 264.

Europe and Asia to Himalayas and India.

North America: Greenland and Labrador to N. H., N. J.? and Penn.? W. to Minn., Colo., Alaska, N. W. T. and Washington.

Minn. valley: N. W. and W. districts; probably also N. and N. E.; bogs and marshes.

HERB.: *Taylor 830*, Glenwood; *Sheldon 1329*, Lake Benton.

Epilobium lineare MUHL. Cat. 39 (1813).

E. densum RAF. Desv. Journ. II, 271 (1814).

E. rosmarinifolium PURSH, Fl. Am. 259 (1814).

E. squamatum NUTT. Gen. I, 250 (1818).

E. palustre var. *lineare* GRAY, Man. 2 ed. 130 (1852).

E. oliganthum MICHX. Fl. N. Am. I, 223 (1803) *in part.*

? *E. palustre* var. *oliganthum* (MICHX.) B. S. P. Cat. N. Y. (1888).

Wats. and Coult., Gray's Man. 6 ed. 189; Britt., Fl. N. J. 108; Upham, Fl. Minn. 57; Mac., Fl. Can. I, 170; Chap., Fl. S. St. 140?; Coult., Fl. Colo. 102; Webb., Fl. Neb. 126; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 50; Roth., Wheel. Exp. 39; Trelease, Monog. Epilob. 87, 88; Wats., Bibl. Ind. I, 366; Hart., Fl. Scand. I, 265.

Norway, Scand., Lapland and N. Russia.

North America: Labrador and N. Br. to Man., Brit. Col and Selkirks to lat. 68° N. on Mackenzie river; S. to N.

Eng., N. J , Del., Penn., Ills., Kan., Neb., Ind. Terr. and Yellowstone reg.

Minn. valley: N. E., N. and N. W. districts; bogs and marshes.

HERB.: *Taylor 954*, Glenwood; *Ballard 842*, Patterson lake, Carver Co.; *Roberts 40*, Stewart river; *Herrick 113*, Minneapolis; *Sandberg 206*, Red Wing; *Bailey 70*, Vermilion lake; *Bailey 320*, St. Louis river; *Leiberg 20*, Blue Earth Co.; *Herb. Sheld. 1664*, Minneapolis.

Epilobium angustifolium LINN. emend. Spec. 347 (1753).

E. spicatum LAM. Fl. Fr. 1077 (1778).
E. pauciflorum SCHRANK, Pl. Labr. (1820).
Chamoenerium angustifolium SPACH, Hist. Veg. IV, 396 (1835).

Wats. and Coult., Gray's Man. 6 ed. 188; Mac., Fl. Can. I, 168, 530; Upham, Fl. Minn. 57; Britt., Fl. N. J. 108; Webb., Fl. Neb. 126; Hook., Fl. Gt. Brit. 156; Trautv., Fl. Sib. 54; Chap., Fl. S. St. 139; Coult., Fl. Colo. 101; Brew. and Wats., Fl. Calif. I, 218; Forbes and Hems., Fl. Sin. 307; Led., Fl. Ross. II, 105; Miyabe, Fl. Kur. 235; Herd., Fl. Eur. Russ. 50; Trelease, Monog. Epilob. 80; Roth., Wheel. Exp. 120; Wats., King Exp. 104; Wats., Bibl. Ind. I, 366; Hart., Fl. Scand. I, 262; Greene, Fl. Fran. 210.

Temperate and Arctic Europe to Caucasus; N. and W. Asia, all Siberia to Himalayas; China, Japan and Kuriles.

North America: Greenland, Newf., Labrador, N. S., N. Br. to Hudson Bay, N. W. T. and Alaska; S. to N. Eng., N. J. and mts. of N. Car.; S. to Minn., Neb., Colo., Kan. and Baker mts., Arizona; S., W. of Rockies to Oregon, Calif. and Nevada; N. Mexico, Arizona and S. Utah.

Minn. valley: Forest district and N. W. district; rare E. in valley; infrequent N. W.; burnt woodland or barrens.

HERB.: *Taylor 1036*, Glenwood; *Ballard 343*, Helena, Scott Co.; *Holzinger 80*, Winona Co.; *Leonard 18*, Duluth; *Winchell 6*, Duluth; *Herrick 112*, Minneapolis; *Kassube 93*, Minneapolis; *Bailey 9*, Vermilion lake; *Arthur 153*, Vermilion lake —(white-flowered form); *Sandberg 205*, Red Wing; *MacM. and Sheld. 30*, Brainerd.

CIRCAEA LINN. Gen. 9 (1737).

Ocimastrum RUPP. Fl. Ingr. 366 (1718).

Baillon, *Hist. Pl.* VI, 141; Benth. and Hook , *Gen. Pl.* I, 793; Durand, *Ind. Gen. Phan.* 141; Schenck, (Onagraceae), *Palaeophyt.* 630.

Living species: 6; N. hemisphere, boreal and temperate regions. Russia, 3; Europe, 3; North America, 3; Canada, 3; S. Sts., 2; E. Sts., 2; California, 1; Rocky mts., 1; Pl. King, 1.

Fossil species: *Trapa natans* is found in Tertiary of Alaska, Colo., Portugal, Japan and Saghalin, and in Quaternary at Cromer.

Circaea alpina LINN. Spec. 9 (1753).

Wats. and Coult., Gray's Man. 6 ed. 193; Britt., Fl. N. J. 111; Mac., Fl. Can. I, 174; Hook., Fl. Gt. Brit. 159; Upham, Fl. Minn. 57; Chap., Fl. S. St. 143; Forbes and Hems., Fl. Sin. 310; Led., Fl. Ross. II, 114; Nym., Fl. Eur.; Miyabe, Fl. Kur. 235; Herd., Fl. Eur. Russ. 50; Wats., King Exp. 113; Wats., Bibl. Ind. I, 363; Hart., Fl. Scand. I, 266.

Europe; N. and W. Asia to Himalayas, India, China and Kurile Isls.; N. Africa.

North America: Labrador to N. Eng., N. J. and Ga.; W. to Ind. and Minn.; N. to Man., N. W. T. and Alaska.

Minn. valley: Forest district to Blue Earth Co.; deep woods and near springs or bogs.

HERB.: *Sheldon 269,* Madison Lake; *Roberts 39,* Duluth; *Herrick 111,* Minneapolis; *Holway 28,* Vermilion lake; *Sandberg 204,* Chisago Co.; *Bailey 207,* Vermilion lake.

Circaea lutetiana LINN. Spec. 8 (1753).

C. lutetiana var. *canadensis* LINN. Spec. 8 (1753).
C. canadensis HILL. Veg. Syst. 10 (1762).

Wats. and Coult., Gray's Man. 6 ed. 193; Britt., Fl. N. J. 111; Webb., Fl. Neb. 125; Mac., Fl. Can. I, 175; Chap., Fl. S. St. 143; Hook., Fl. Gt. Brit. 159; Upham, Fl. Minn. 57; Forbes and Hems., Fl. Sin. 310; Led., Fl. Ross. II, 113; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 50; Cov., Fl. Ark. 184; Wats., Bibl. Ind. I, 363; Hart., Fl. Scand. I, 265.

Europe; N. Africa; N. and W. Asia to Caucasus, Ural and Altai Siberia and Himalayas to China.

North America: N. S., N. Br., Q., Ont. to N. Eng., N. J. and Ga.; W. to Minn., Neb., Wyoming and Ark.

Minn. valley: Throughout, especially in forest district; damp woods and along streams or near lake shores.

HERB.: *Sheldon 1038,* Sleepy Eye; *Sheldon 805,* Sigel township, Brown Co.; *Sheldon 940,* Redwood Falls; *Taylor 886,* Glenwood; *Ballard 493,* Prior's lake, Scott Co.; *Ballard 537,* Cleary's lake, Scott Co.; *Ballard 672,* Waconia; *Ballard 857,* Page lake, Carver Co.; *Sandberg 203,* White Rock; *Oestlund 58,* Minneapolis; *Holzinger 79,* Winona Co.; *Oestlund 60,* Minneapolis; *Herrick 110,* Minneapolis; *Winchell 5,* Minnetonka.

ŒNOTHERA LINN. Gen. 318 (1737).

Onagra, Baumannia, Xylopleurum, Kneiffia, Lavauxia, Pachylophus, Megapterium, Calylophus, Godetia, Boisduvalia, Agassizia, Hartmannia SPACH, Suit. Buff. IV, 357 seq. (1839).
Meriolix RAF. Am. Mo. Mag. (1819).

Sphaerostigma ENDL. Gen. 1189 (1840).
Chamissonia LINK, Jahrb. 186 (1818).
Holostigma. Cratericarpum, Blennoderma SPACH, Ann. Mus. IV, 327 seq. (1835).
Primulopsis TORR. and GR. Fl. Am. I, 506 (1838).
Heterostemun NUTT. ex Endl. Gen. 6113 (1840).
Taraxia NUTT. T. and G. Fl. Am. I, 506 (1838).
Chylisma SPACH, ex Durand, Ind. Gen. Phan. 141 (1888).

Baillon, *Hist. Pl.* VI, 490; Benth. and Hook., *Gen. Pl.* I, 789; Durand, *Ind. Gen. Phan.* 141.

Living species: 100±; tropical and temperate America; Tasmania, and a few around the world in warmer regions. North America, 80; California, 40–45; Canada, 10; Rocky mts., 19–21; E. Sts., 16–17; Pl. Wheel., 20–25; Pl. King, 20; S. Sts., 8; W. Tex., 24; 1 intro. in Russia, 1 in Europe.

Œnothera albicaulis NUTT. Fras. Cat. (1813).

Œ. pallida LINDL. Bot. Reg. 1142 (1832).
Baumannia nuttalliana and *douglasiana* SPACH, Hist. Veg. IV, 352 (1838).
Oenothera pinnatifida var. *integrifolia* GRAY, Pl. Fendl. 44 (1849).

Wats. and Coult., Gray's Man. 6 ed. 191; Webb., Fl. Neb. 126; Upham, Fl. Minn. 58; Coult., Fl. Colo. 104; Mac., Fl. Can. 172; Brew. and Wats., Fl. Calif. I, 223; Roth., Wheel. Exp. 122; Wats., King Exp. 106; Wats., Bibl. Ind. I, 377; Webb., Appx. Neb. 33; Greene, Fl. Fran. 212.

North America: Brit. Col. and Saskatchewan to W. Minn., Neb.. Kan., N. Mex.; W. to Mont., Wyoming, Colo., and Sierra Nevada mts.

Minn. valley: W. districts, from New Ulm; prairies and high hills.

HERB.: *Sheldon 1194,* New Ulm.

Œnothera serrulata NUTT. Gen. I, 246 (1818).

Calylophis nuttallii SPACH, Monog. Onag. 17 (1838).
Meriolix serrulata WALP. Rep. II, 79 (1843).
Œnothera fruticosa GRAY, Pl. Fendl. 44 (1849).

Wats. and Coult., Gray's Man. 6 ed. 192; Webb., Fl. Neb. 126; Upham, Fl. Minn. 58; Coult., Fl. Colo. 105; Coult., Fl. Tex. 117; Cov., Fl. Ark. 183; Wats., Bibl. Ind. I, 385.

North America: Wisc. and Minn. to Dak., Neb., Mo., Ark., N. Mex. and Tex.

Minn. valley: Throughout; especially at higher levels in prairie district; high fields, hillsides.

HERB.: *MacMillan 12,* Glenwood; *Sheldon 932,* Redwood Falls; *Sheldon 731,* Sigel township, Brown Co.; *Sheldon 1576,* Lake Benton; *Sheldon 1109,* Springfield; *Taylor 750,* Glenwood; *Ballard 179,* Jordan, Scott Co.; *Holzinger 84,* Winona Co.; *Oestlund 63,* Minneapolis; *Herrick 118,* Minneapolis; *Juni 3*, Wilmar; *Sandberg 210*, Red Wing; *Kassube 96*, Minneapolis; *Herb. Sheld. 1782*, Minneapolis; *Herb. Wickersheim 51*, Idlewild; *Herb. Moyer 86*, Minnesota valley, near Montevideo.

Œnothera pumila LINN. Spec. 2 ed. 493 (1762).

Œ. pusilla MICHX. Fl. N. Am. I, 225 (1803).
Œ. chrysantha MICHX. Fl. N. Am. I, 225 (1803).
Kneiffia pusilla and *chrysantha* SPACH, Monog. Onag. 47, 48 (1838).

Wats. and Coult., Gray's Man. 6 ed. 191; Britt., Fl. N. J. 110; Mac., Fl. Can. I, 172; Chap., Fl. S. St. 139; Upham, Fl. Minn. 58; Wats., Bibl. Ind. I, 384.

North America: N. S., N. Br., Q., Ont. to S. Man.; S. to N. Eng., N. J., and W. to Minn. and Kan.

Minn. valley: Reported from N. edge and S. E. district; infrequent or local.

Œnothera rhombipetala NUTT. T. and G. Fl. I, 493 (1838).

Wats. and Coult., Gray's Man. 6 ed. 190; Webb., Fl. Neb. 126; Coult., Fl. Colo. 103; Upham, Fl. Minn. 58; Cov., Fl. Ark. 183; Wats., Bibl. Ind. I, 384.

North America: Ind. to Minn., Dak., Neb., Ind. Terr. and Ark.

Minn. valley: N. E. district and probably to Blue Earth Co.; sandy or barren soil.

HERB.: *Kassube 95*, Minneapolis; *Sandberg 209*, Cannon Falls.

Œnothera biennis LINN. Spec. 346 (1753).

Œ. parviflora LINN. Spec. 2 ed. 492 (1762).
Onagra biennis SCOP. Fl. Carn. 2 ed. 451 (1772).
Œnothera gauroides HORNEM. Hort. Hafn. 362 (1807).
? *Onoseris acuminata* RAF. Fl. Lud. 96 (1817).

Wats. and Coult., Gray's Man. 6 ed. 190; Britt., Fl. N. J. 109; Mac., Fl. Can. I, 171; Webb., Fl. Neb. 126; Upham, Fl. Minn. 57; Chap., Fl. S. St. 138; Hook., Fl. Gt. Brit. 159; Brew. and Wats., Fl. Calif. I, 223; Coult. Fl. Colo. 103; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 50; Coult., Fl. Tex. 114; Roth., Wheel. Exp. 121; Wats., King Exp. 106; Cov. Fl. Ark. 183; Wats., Bibl. Ind. I, 377.

Naturalised in S. Africa, India, Australia and W. Europe.

North America: Atl. to Pac. in Canada; N. to Labrador and N. W. T.; throughout U. S.

Minn. valley: Throughout; fields, along roads and on railway embankments; common.

HERB.: *Sheldon 980*, Sleepy Eye; *Sheldon 511*, Waseca; *Taylor 726*, Minnesota lake; *Ballard 249*, Jordan, Scott Co.; *Ballard 563*, Prior's lake, Scott Co.; *Ballard 646*, Chaska; *Shel-*

don 1306, Lake Benton; *Ballard 763*, Waconia; *Taylor 864*, Glenwood; *Ballard 889*, St. Bonifacius; *Sandberg 208*, Cannon Falls; *Bailey 502*, Agate bay; *Herrick 116*, Minneapolis; *Roberts 41*, Grand Marais; *Herrick 117*, Minneapolis; *Holzinger 83*, Winona Co.; *Oestlund 62*, Minneapolis; *Herb. Sheld. 1921*, Minneapolis; *Herb. Moyer 85*, Montevideo.

LXXVIII. HALORRHAGIDACEAE. Water-Milfoil Family.

Endlicher, *Gen. Pl.* 1195 (1836–40); Endlicher, *Gen. Pl.* 285 (1836–40)—*Gunneraceae*; Bentham and Hooker *Gen. Plant.* I, 673 (1865); Baillon, *Hist. Pl.* VI, 485 (1877)—sub *Onagrariaceae*, Trib. V, VI, VII.

Genera: 6–7; cosmopolitan.

Species: 100± living; almost all aquatic; a few fossil in Tertiary rocks.

HIPPURIS LINN. Gen. 1 (1737).

Limnopeuce VAILL. Act. Acad. Par. 1 (1719).

Pinastella DILL. Nov. Gen. 168 (1719).

Baillon, *Hist. Pl.* IV, 499; Benth. and Hook., *Gen. Pl.* I, 675; Durand, *Ind. Gen. Phan.* 122; Schenck, *Palaeophyt.* 632.

Living species: 3±; Europe; Asia; North America; Chile to Patagonia. North America, 3; Europe, 1; Russia, 2; Canada, 3; California, 1; Pl. King, 1; Rocky mts., 1; Pl. Wheel., 1.

Fossil species: *H. vulgaris* in Cromer forest bed.

Hippuris vulgaris LINN. Spec. 4 (1753).

Limnopeuce vulgaris VAILL. Mem. Par. 15 (1719).

Hippuris polyphylla RAF. Fl. Lud. 13 (1817).

Wats. and Coult., Gray's Man. 6 ed. 182; Mac., Fl. Can. I, 167, 529; Coult., Fl. Colo. 99; Brew. and Wats., Fl. Calif. I, 215; Hook., Fl. Gt. Brit. 151; Forbes and Hems., Fl. Sin. 292; Led., Fl. Ross. II, 119; Nym., Fl. Eur.; Wats., King Exp. 102; Roth., Wheel Exp. 119; Wats., Bibl. Ind. I, 356; Hart., Fl. Scand. I, 266; Greene, Fl. Fran. 228.

Cosmopolitan: Europe; Asia; S. America; Australia.

North America: Newf., Labrador, N. S. to Hudson straits, N. W. T. and Alaska; S. to Penn., Ind., Mo., N. Mex. and California.

Minn. valley: Throughout, especially in W. districts; local or rare; ponds, lakes and sluggish streams.

HERB.: *Taylor 1151*, Glenwood; *Bailey 134*, Vermilion lake; *Sandberg 202*, Red Wing.

MYRIOPHYLLUM LINN. Gen. 724 (1737).

Purshia RAF. N. Y. Med. Repos. II, 361 (1808).

Pelonastes HOOK. f. Lond. Jour. Bot. VI, 474 (1846).

Pentapterophyllum DILL. Nov. Gen. 7 (1719).
Pentapteris HALL. Helv. I, 454 (1768).
Enydria VELLOZ. Fl. Flum. I, 150 (1827).
? **Hylas** BIGEL. ex ENDL. Gen. 6135 (1840).
Belioukandas CELT. ex Adans Fam. Pl. II, 471 (1763).

Baillon, *Hist. Pl.* VI, 298; Benth. and Hook., *Gen. Pl.* I, 676; Durand, *Ind. Gen. Phan.* 122; Schenck, *Palaeophyt.* 632

Living species: 18; cosmopolitan; North America, 12; Russia, 3; Europe, 3; E. Sts., 7; Mexico, 6; S. Sts., 4; Canada, 5; California, 2; Rocky mts., 2; Pl. King., 1.

Fossil species: Tertiary, Japan (*Nathorst*); Quaternary, Radobo (*Unger*); forest bed of Cromer? *Myriophyllites.*

Myriophyllum heterophyllum MICHX. Fl. N. Am. II, 191 (1803).

Potamogeton verticillatum WALT. Fl. Car. 90 (1788) *not Linn.*

Wats. and Coult., Gray's Man. 6 ed. 181; Mac., Fl. Can. I, 167; Upham, Fl. Minn. 56; Britt., Fl. N. J. 105; Chap., Fl. S. St. 143; Coult., Fl. Tex., 111; Morong, Torr. Bull. XVIII, 244; Cov., Fl. Ark. 182; Wats., Bibl. Ind. I, 356.

North America: Ont. to Georgian Bay; S. to N. Eng., N. Y., N. J. to Fla.; W. to Minn., Mo., Ark., La. and W. Tex.

Minn. valley: Reported from ponds and lakes, southwest districts; infrequent.

Myriophyllum verticillatum LINN. Spec. 992 (1753).

Wats. and Coult., Gray's Man. 6 ed. 181; Mac., Fl. Can. I, 167; Coult., Fl. Colo. 100; Upham, Fl. Minn. 56; Chap., Fl. S. St. 143; Hook., Fl. Gt. Brit. 153; Trautv., Fl. Sib. 55; Forbes and Hems., Fl. Sin. 293; Led., Fl. Ross. II, 118; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 50; Morong, Torr. Bull. XVIII, 242; Wats., King Exp. 102; Wats., Bibl. Ind. I, 357; Hart., Fl. Scand. I, 267.

Europe; N. Africa; N. and W. Asia to India and China.

North America: Ont. to Man. and lat. 52° N.; S. to N. Eng., N. Y., Fla.; W. to Minn., Iowa and Colo.

Minn. valley: S. central district; deep water in lakes and ponds.

HERB.: *Sheldon 370*, Duck lake, Blue Earth Co.

Myriophyllum spicatum LINN. Spec. 992 (1753).

Wats. and Coult., Gray's Man. 6 ed. 181; Britt., Fl. N. J. 105; Mac., Fl. Can. I, 166, 529; Coult., Fl. Colo. 99; Hook., Fl. Gt. Brit. 152; Brew. and Wats., Fl. Calif. I, 215; Upham, Fl. Minn. 56; Forbes and Hems., Fl. Sin. 293; Led., Fl. Ross. II, 118; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 50; Cov., Fl. Ark. 182; Wats., Bibl. Ind. I, 357; Morong, Torr. Bull. XVIII, 241; Hart., Fl. Scand. I, 267; Greene, Fl. Fran. 228.

All Europe and N. Africa; N. and W. Asia to Caucasus and India; China.

North America: Newf., N. B., Q., Ont. to Brit. Col., Selkirks, Bear lake, Alaska and Puget Sound; S. to N. J.; W. to Minn. and Ark.; S. to Colo. in. mts.; S. to California along Sierras and Coast range.

Minn. valley: Throughout; rising near the surface of deep water in ponds and lakes.

HERB.: *Taylor 319,* Janesville; *Ballard 901,* Waconia; *Ballard 863,* Page lake, Carver Co.; *Ballard 602,* Prior's lake, Scott Co.; *Ballard 448,* Prior's lake, Scott Co.; *Taylor 1049,* Glenwood; *Sheldon 433,* Lake Elysian, Waseca Co.; *Sheldon 371,* Duck lake, Blue Earth Co.; *Oestlund 57,* Minneapolis; *Bailey 368,* Mud river; *Sheldon 316,* Madison Lake, Blue Earth Co.

LXXIX. ARALIACEAE. Ginseng Family.

Endlicher, *Gen. Pl.* 793 (1836-40); Endlicher, *Gen. Pl.* 328 (1836-40) —*Helwingiaceae;* Seem., *Journ. Bot.* II, IV (1864-66)—*Hederaceae;* Bentham and Hooker, *Gen. Plant.* I, 931 (1862-67); Baillon, *Hist. Pl.* VII, 175 (1880)—Trib. VI, sub *Ombelliféres.*

Genera: 25 (Baillon); 38 (B. and H.); tropical regions, a few temperate and 1-2 in Antarctic islands.

Species: 400± living; 40-50 fossil; Cretaceous (Lower) to Pliocene.

ARALIA LINN. Gen. 251 (1737).

Aureliana LAFIT. Mem. Gins. (1718).

Dimorphanthus MIQ. Comm. Phyt. 95 (1838).

Baillon, *Hist. Pl.* VII, 244; Benth. and Hook., *Gen. Pl.* I, 936; Durand, *Ind. Gen. Phan.* 166; Schenck, *Palaeophyt.* 604.

Living species: 35; tropical and E. temp. Asia; N. America to Mexico. North America, 10; E. Sts., 6; Canada, 5; Rocky mts., 2; S. Sts., 6; California, 1

Fossil species: Lower Cretaceous, Potomac, Virginia (*Fontaine*—Araliophyllum); Upper Cretaceous, Kansas, Europe (*Lesquereaux, Heer*); Tertiary (*Heer*) Greenland; France (*Saporta*); Westphalia (*Schimper*—Araliophyllum); several species described; many of them doubtful.

Aralia trifolia (LINN.) DECN. and PLANCH. Rev. Hortic. 104 (1854).

Panax trifolium LINN. Spec. 1058 (1753).

P. lanceolatum RAF. N. Fl. IV, 57 (1836).

Wats. and Coult., Gray's Man. 6 ed. 213; Britt., Fl. N. J. 119; Mac., Fl. Can. I, 189; Upham, Fl. Minn. 63; Chap., Fl. S. St. 167; Wats., Bibl. Ind. I, 436.

North America: N. S., N. Br., Q., Ont. to N. Eng., N. J., Va. and Ga.; W. to Ohio and Minn.

Minn. valley: Forest district, and reported W. to Nicollet Co.; rare; rich, deep woods.

HERB.: ? *Sandberg 234,* Minnesota?

Aralia quinquefolia (LINN.) DECN. and PLANCH. Rev. Hortic. 104 (1854).

Panax quinquefolium LINN. Spec. 1058 (1753).
P. americanum RAF. N. Fl. IV, 58 (1836).

Wats. and Coult., Gray's Man. 6 ed. 213; Britt., Fl. N. J. 119; Mac., Fl. Can. I, 189, 537; Chap., Fl. S. St. 167; Upham, Fl. Minn. 63; Forbes and Hems., Fl. Sin. 338: Cov., Fl. Ark., 186; Wats., Bibl. Ind. I, 436.

Manchuria, Japan and Corea.

North America: Q., Ont. to Vt., Conn., N. J. and Ga.; W. to Ohio, Wisc., Minn. and Ark.

Minn. valley: Forest district to New Ulm, and possibly Chippewa valley; not very abundant; deep woods.

HERB.: *Ballard 334,* Belle Plaine; *Sheldon 403,* Stony Point, Lake Madison; *Taylor 711,* Minnesota lake; *Holzinger 93,* Winona Co.; *Sandberg 233,* Vasa.

Aralia nudicaulis LINN. Spec. 274 (1753).

Wats. and Coult., Gray's Man. 6 ed. 213; Britt., Fl. N. J. 119; Mac, Fl. Can. I, 189, 537; Coult., Fl. Colo. 122; Chap., Fl. S. St. 166; Upham, Fl. Minn. 63; Wats.. Bibl. Ind. I, 435.

North America: Newf. to Rockies, Brit. Col, Selkirks, Mackenzie river to 64° N. lat.; S. to N. J. and Ga.; W. to Minn. and Dak.

Minn. valley: Throughout; abundant; moist deep woods and ravines.

HERB.: *Taylor 813,* Glenwood; *Ballard 296,* Jordan, Scott Co.; *Sheldon 133,* Madison Lake; *Taylor 130a,* Janesville; *Ballard 477,* Prior's lake, Scott Co.; *Leonard 19,* Chatfield; *Roberts 45,* French river; *Kassube 107,* Minneapolis; *Sandberg 232,* Goodhue Co.; *Arthur 41,* Vermilion lake; *Herb. Sheld. 1792,* Minneapolis; *Herb. Wickersheim 55,* Idlewild; *Herb Moyer 95,* Montevideo.

Aralia hispida VENT. Hort. Cels 41 (1800).

A. muhlenbergiana R. and S. Syst. VI, 704 (1820).

Wats. and Coult., Gray's Man. 6 ed. 213; Britt., Fl. N. J. 119; Mac., Fl. Can. I, 189; Upham, Fl. Minn. 63; Chap., Fl. S. St. 166; Wats., Bibl. Ind. I, 435.

North America: Newf., Q., Ont. to N. Y., N. Car. and Ga.; W. to Minn. and Dak.

Minn. valley: Reported from N. E. district; Dakota Co.; local or rare; rocky woods and banks.

HERB.: *Arthur 47*, Vermilion lake; *Roberts 44*, Duluth; *Bailey 341*, St. Louis river; *Sandberg 231*, Tower.

Aralia racemosa LINN. Spec. 273 (1753).

Wats. and Coult., Gray's Man. 6 ed. 213; Britt., Fl. N. J. 119; Mac., Fl. Can. I, 188; Chap., Fl. S. St. 166; Coult., Fl. Colo. 122; Upham, Fl. Minn. 63; Miyabe, Fl. Kur. 237 in var.; Wats., Bibl. Ind. I, 436; Webb., Appx. Neb. 33.

Saghalin and Japan in a varietal form.

North America: N. S., N. Br., Q., Ont. to N Eng., N. J. and Ga.; W. to Wisc., Minn. and Neb.; base of Rocky mts. in Colo. and Mont.

Minn. valley: Forest district and banks of streams, W. to Chippewa valley; rich woodland.

HERB.: *Ballard 404*, Jordan, Scott Co.; *Sheldon 276*, Madison Lake; *Sheldon 800*, Sigel township, Brown Co.; *Taylor 814*, Glenwood; *Kassube 106*, Minneapolis; *Oestlund 73*, Hennepin Co.; *Sandberg 230*, White Rock; *Herb. Sheld. 1708* Minneapolis.

LXXX. UMBELLIFERAE. Parsley Family.

Endlicher, *Gen. Pl.* 762 (1836–40); Lindl. Veg. King. 773 (1846)—*Apiaceae;* Bentham and Hooker, *Gen. Plant.* I, 859 (1862–67); Baillon, *Hist. Pl.* VII, 84 (1880).

Genera: 100–150; temperate regions, especially in N. hemisphere and old world; rare within the tropics.

Species: 1500±; a very few fossils from Tertiary.

SANICULA LINN. Gen. 201 (1737).

Erythrosana SCHM. Max. Prim. Amur. 123 (1859).

Baillon, *Hist. Pl.* VII, 535; Benth. and Hook., *Gen. Pl.* I, 880; Durand, *Ind. Gen. Phan.* 156.

Living species: 13; Europe; temperate Asia; Sandwich Isles; Azores; N. and S. America; extra-tropical. N. America, 10; E. Sts., 1; W. sts., 9; Russia, 1; Europe, 1; Russian Europe, 1; W. Tex., 1; Canada, 6–7; Rocky mts., 1; California, 8; S. Sts. 2.

Sanicula marylandica LINN. Spec. 235 (1753).

Wats. and Coult., Gray's Man. 6 ed. 212; Britt., Fl. N. J. 113; Coult., Fl. Colo. 114; Chap., Fl. S. St. 159; Mac., Fl. Can. I, 179, 533; II, 324; Webb., Fl. Neb. 124; Coult., Fl. Tex. 145; Wats., Bibl. Ind. I, 431; C. and R., Rev. N. A. Umb. 102.

North America: Newf., N. S., N. Br., Q., Ont. to

Brit. Col.. Vancouver and Rockies; S. to N. Eng., N. J., Ga., Tenn.; W. to Minn., Dak., Mont., Colo., Neb., Kan., Tex.

Minn. valley: Throughout; common; woods, thickets and copses.

HERB.: *Ballard 390*, Jordan, Scott Co.; *Ballard 73*, Chaska; *Taylor 625*, Minnesota lake; *Taylor 993*, Glenwood; *Sheldon 141*, Madison Lake; *Taylor 282*, Janesville; *Sheldon 189*, Janesville; *Sheldon 885*, Sleepy Eye; *Juni 4*, Minneapolis; *Bailey 216*, Vermilion lake; *Holzinger 86*, Winona Co.; *Kassube 94*, Minneapolis; *Oestlund 66*, Ramsey Co.; *Sandberg 215*, Goodhue Co.; *Herb. Sheld. 1794*, Minneapolis; *Herb. Moyer 89*, Montevideo.

Sanicula canadensis LINN. Spec. 235 (1753).

Triclinium odoratum RAF. Fl. Lud. 79 (1817).
S. marylandica var. *canadensis* TORR. Fl. U. S. 302 (1824).
S. marylandica T. and G. Fl. I, 602 (1838) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 212; Britt., Fl. N. J. 113; Webb. Fl. Neb. 124; Upham, Fl. Minn. 60; Mac., Fl. Can. I, 178; Chap., Fl. S. St. 159; Cov., Fl. Ark. 185; Mac., Fl. Can. I, 533; Wats., Bibl. Ind. I, 431; C. and R., Rev. N. A. Umb. 103.

North America: N. Br., Anticosti, Ont. to N. Eng., N. J., Ga. and Tenn.; W. to Minn., Dak., Neb. and E. Kan.

Minn. valley: Throughout, but infrequent; thickets and edges of woods.

HERB.: *Sheldon 983*, Cross lake, Brown Co.; *Holzinger 85*, Winona Co.

ERYNGIUM LINN. Gen. 199 (1737).

Lessonia BERT. Deless. Ic. Sel. III, 45 (1837).
Strebanthus RAF. Ser. Bull. I, 218 (1830).
? **Alepidea** LAROCHE, Hist. Eryng. 19 (1808).

Baillon, *Hist. Pl.* VII, 240; Benth. and Hook., *Gen. Pl.* 878; Durand, *Ind. Gen. Phan.* 156.

Living species: 150±; most regions except S. Africa? and frigid zones. Russia, 9; Europe, 29; Russian Europe, 4; North America, 22; E. Sts., 10; W. Sts., 9, 3 common to both; S. Sts., 8; California, 2–3.

Eryngium aquaticum LINN. Spec. 232 (1753).

E. yuccaefolium MICHX. Fl. N. Am. I, 164 (1803).

Wats. and Coult., Gray's Man. 6 ed. 211; Britt., Fl. N. J. 113; Upham, Fl. Minn. 60; Chap. Fl. S. St. 160; Coult., Fl. Tex. 143; Cov., Fl. Ark. 185; Wats., Bibl. Ind. I, 422; C. and R., Rev. N. A. Umb. 93.

North America: N. J. to Fla.; W. to Minn., Neb., Ark. and E. Tex.

Minn. valley: E. districts to Cottonwood and Chippewa valleys; dry prairies or banks.

HERB.: *Taylor 593*, Minnesota lake; *Sheldon 1154*, Sleepy Eye; *Taylor 471*, Janesville; *Sheldon 634*, Wilton, Waseca Co.; *Sheldon 674*, Waseca; *Sandberg 216*, Cannon Falls.

POLYTAENIA DC. Mem. Umbel. 53 (1829).

Baillon, *Hist. Pl.* VII, 207 (*sub Tordylium* Linn); Benth. and Hook., *Gen. Pl.* I, 922; Durand, *Ind. Gen. Phan.* 164.

Living species: 1; N. America.

Polytaenia nuttallii DC. Mem. Umbel. 53 (1829).

Pachiloma nuttallii RAF. N. Fl. IV, 33 (1836).

Wats. and Coult., Gray's Man. 6 ed. 203; Webb., Fl. Neb. 124; Coult., Fl. Colo. 121; Upham, Fl. Minn. 60; Coult., Fl. Tex. 142; Chap., Suppl S. St. 623; Cov., Fl. Ark. 186; Wats., Bibl. Ind. I, 431; C. and R., Rev. N. A. Umb. 49.

North America: Colo. and Minn. to Neb., Ind., La. and E. Tex.

Minn. valley: Reported from S. E. edge; no Minn. specimens seen.

HERACLEUM LINN. Gen. 231 (1737).

Sphondylium TOURN. Inst. 319 (1700).
Barysoma BUNGE, Del. Sem. Dorpat. (1839).
Wendia HOFFM. Umb. 136 (1814).
Tordyliopsis DC. Prodr. IV, 199 (1830).
Trigonosciadium BOISS. Ann. sci. Nat. ser. 3, I, 344 (1844).
Stenotaenia BOISS. l. c. 339 (1844).

Baillon, *Hist. Pl.* VII, 205; Benth. and Hook., *Gen. Pl.* I, 921; Durand, *Ind. Gen. Phan.* 164.

Living species: 80 described, 60 distinct (Durand); temperate northern regions of old world; 1 sp. N. America.

Heracleum lanatum MICHX. Fl. N. Am. I, 166 (1803).

H. spondylium NUTT. Gen. I, 181 (1818).
H. panaces SPRENG. Syst. I, 912 (1825) *in part.*
H. auritum BISCH. Del. Sem. Heid. (1839).

Wats. and Coult., Gray's Man. 6 ed. 202; Britt., Fl. N. J. 118; Webb., Fl. Neb. 124; Mac., Fl. Can. I, 187; Chap., Fl. S. St. 165; Upham, Fl. Minn. 60; Coult., Fl. Colo. 121; Brew. and Wats., Fl. Calif. I, 271; Forbes and Hems., Fl. Sin. 336; Led., Fl. Ross. II, 323; Miyabe, Fl. Kur. 236; Coult., Fl. Tex. 141; Roth., Wheel. Exp. 134; Wats., Bibl. Ind. I, 423; C. and R., Rev. N. A. Umb. 48.

Altai Siberia, Manchuria, Japan, Saghalin, Kurile Isls. and Kamtk.; Russian Asia, N.

North America: Newf. and Labrador to N. J., N. Car. and Ky.; W. to Brit. Col., Alaska, Calif., Washington; S. to Minn., Colo., Neb., Tex.

Minn. valley: Throughout; low damp ground; commonly along streams.

HERB.: *Taylor 266*, Janesville; *Sheldon 839*, Sleepy Eye; *Sheldon 391*, Madison Lake; *Ballard 115*, Chaska; *Taylor 808*, Glenwood; *Oestlund 67*, Minneapolis; *Sandberg 217*, Vasa; *Herb. Moyer 90*, Montevideo.

PEUCEDANUM LINN. Gen. 212 (1737).

Pastinaca, Ferula, Imperatoria, Anethum, and **Peucedanum** TOURN. Inst. 316 seq. (1700).

Dorema DON, Trans. Linn. Soc. XVI, 601 (1833).
Soranthus LED. Fl. Alt. I, 344 (1830).
Xanthoselinum, Macroselinum SCHUR. Transsylv. 264 (1866).
Ormoselenia, Hammatocaulis, TAUSCH, Flora (1834–1844).
Eleochytris FENZL. Ill. Syr. 71 (1843).
Cynorhiza, Dregea E. and Z. Enum. Afr 350 (1837).
Bubon, Ferulago KOCH, Nov. Act. Cur. XII, 95, 97 (1825).
Alvardia, Uloptera FENZL. Flora, 461 (1834), 312 (1844).
Xanthogalum LALL. F. and M. Ind. Petr. VIII, 73 (1841).
Taeniopetalum, Scorodosma BUNGE, Rel. Lehm. (1851).
Narthex FALC. Trans. Linn. Soc. XX, 285 (1851).
Eriosynaphe DC. Prodr. IV, 175 (1830).
Oreoselinum BIEB. Fl. Taur.-Cauc. III, 200 (1819).
Steganotaenia HOCHST Flora 347 (1834).
Sciothamnus ENDL. Gen. 780 (1840).
Euryptera NUTT. T. and G. Fl. N. Am. I, 629 (1838).
Opoidia LINDL. Bot. Reg (1839).
Peucedanoides BOISS. Fl. Or. II, 983 (1843).
Tommasinia BERT. Fl. Ital. III, 414 (1837).
Polycyrtus SCHLECHT. Linn. XVII, 126 (1843).
Diplotaenia BOISS. Ann. Sci. Nat. ser. 3, I, 308 (1844).
Pleurotaenia HOHEN. Pl. Kotsch.
Galbanophora NECK. Elem. 292 (1790).
Pteroselinum REICH. Fl. Germ. Exc. 453 (1832).
Thysselinum HOFFM. Umb. 153 (1814).
Palimbia BESS. Volhynia, 55 (1821).

Baillon, *Hist. Pl.* VII, 204; Benth. and Hook., *Gen. Pl.* I, 917, 918; Durand, *Ind. Gen. Phan.* 163; Schenck, *Palaeophyt.* 601.

Living species: 180-220; North America, Asia, Europe, tropical and S. America, tropical and S. Africa. North America (Western), 43; Russia, 25; Europe, 30; Russian Europe, 15; Canada, 15; E. Sts., 3; California, 30?; W. Tex., 2; Pl. King, 15.

Fossil species: ?Tertiary (*Peucedanites—Heer*).

Peucedanum nudicaule (PURSH) NUTT. T. and G. Fl. I, 627 (1838).

Smyrnium nudicaule PURSH, Fl. Am. 196 (1814).
Ferula nudicaulis NUTT. Gen. I, 183 (1818).
Pastinaca nudicaulis SPRENG. R. and S. Syst. VI, 587 (1820).

Wats. and Coult., Gray's Man. 6 ed. 203; Webb., Fl. Neb. 124; Upham, Fl. Minn 60; Coult., Fl. Colo. 120: Mac., Fl. Can. II, 329; Coult., Fl. Tex. 142; Wats., King Exp. 130; Wats., Bibl. Ind. I, 429; C. and R., Rev. N. A. Umb. 63.

North America: Minn. and Iowa to Kan., Neb. and N. Colo.; N. to Souris plain, Man., and S. to N. Tex., Arizona and N. Mex.

Minn. valley: S. W. and W. districts; rare; rocky or gravelly knolls and headlands.

HERB.: *Wickersheim 52*, Ash lake, Lincoln Co.

TIEDEMANNIA DC. Prodr. IV, 187 (1830).

Archemora DC. Prodr. IV, 188 (1830).
Neurophyllum TORR. and GR. Fl. Am. I, 612 (1838).
Oxypolis RAF. Ser. Bull. I, 217 (1830) *in part.*

Baillon, *Hist. Pl.* VII, 100; Benth. and Hook., *Gen. Pl.* I, 920; Durand, *Ind. Gen. Phan.* 164.

Living species: 4; N. America; E. Sts., 3; W. Sts., 1; Canada, 1?; S. Sts., 2.

Tiedemannia rigida (LINN.) COULT. and ROSE, Rev. Umbel. (1888).

Sium rigidius LINN. Spec. 251 (1753).
Sison marginatum MICHX. Fl. I, 168 (1803).
Archemora rigida DC. Mem. Umbel. 52 (1829).
Oxypolis rigida, denticulata, tricuspidata RAF. Bull. Soc. Gen. (1830).

Wats. and Coult., Gray's Man. 6 ed. 202; Britt., Fl. N. J. 118; Upham, Fl. Minn. 61; Chap., Fl. S. St. 165; Mac., Fl. Can. I, 188; II, 330; Cov., Fl. Ark. 186; Wats., Bibl. Ind. I, 414.

North America: Ont. and W. N. Y, to N. J.; S. to Fla. and Miss.; W. to Minn., Ark. and Tex.

Minn. valley: Reported from S. edge; infrequent; sandy, low places and along shores of lakes.

ANGELICA LINN. Gen. 218 (1737).

Archangelica HOFFM. Gen. Umbel. 166 (1814).
Czernaevia TURCZ. Baik. Dahur. I, 498 (1842).
Gingidium FORST. Char. Gen. 41, 21 (1776).
Ostericum HOFF. Gen. Umb. 162 (1814).
Gomphopetalum TURCZ. Bull. Mosq. 537 (1841).
Callisace FISCH. Hoff. Umb. 170 (1814).
Eustylis HOOK. Fl. N. Zeal. 19 (1867).
Angelophyllum RUPR. Rev. Umbel. Kamtk. 8 (1859).
Levisticum KOCH. Umb. 101 (——).
Porphyroscias MIQ. ex Durand Ind. Phan. 163 (1888).

Baillon, *Hist. Pl.* VII, 207; Benth. and Hook., *Gen. Pl.* I, 919, 917; Durand, *Ind. Gen. Phan.* 163.

Living species: 35; N. temperate regions; New Zealand. N. America, 16; E. Sts., 4; W. Sts. 12; Canada, 8; S. Sts., 3.

Angelica atropurpurea LINN. Spec. 251 (1753).

A. triquinata MICHX. Fl. N. Am. I, 167 (1803).
Archangelica atropurpurea HOFFM. Umbel. 161 (1814).
Imperatoria lucida NUTT. Gen. I, 181 (1818).

Wats. and Coult., Gray's Man. 6 ed. 201; Britt., Fl. N. J. 117; Upham, Fl. Minn. 61; Mac., Fl. Can. I, 185, 536; Wats., Bibl. Ind. I, 413; C. and R., Rev. N. A. Umb. 41.

North America: Labrador, Newf., N. S., N. Br., Anticosti, Q., Ont. to N. J. and Del.; W. to S. Man., L. Superior reg. and Minn.

Minn. valley: N. E. district and E. edge; Dakota Co.; reported from New Ulm; infrequent; low banks and shores.

HERB.: *Herrick 120*, Minneapolis; *Sandberg 218*, Vasa.

Angelica villosa (WALT.) B. S. P. Cat. N. Y. (1888).

Ferula villosa WALT. Fl. Car. 115 (1788).
Angelica hirsuta MUHL. Cat. 2 ed. 30 (1817).
A. triquinata NUTT. Gen. I, 186 (1818).
Archangelica hirsuta T. and G. Fl. I, 622 (1838).

Wats. and Coult., Gray's Man. 6 ed. 201; Upham, Fl. Minn. 61; Mac., Fl. Can. I, 186; Chap., Fl. S. St. 164; Britt., Fl. N. J. 117; Wats., Bibl. Ind. I, 414; C and R., Rev. N. A. Umb. 41.

North America: Ont. to Conn., N. J., Tenn. and Fla.; W. to Minn. and Mo.

Minn. valley: Reported from E. edge, rare; dry woodland and shaded river banks.

THASPIUM NUTT. Gen. I, 196 (1818).

Baillon, *Hist. Pl.* VII, 209 (sub *Aciphylla* Forst.); Benth. and Hook., *Gen. Pl.* I, 913; Durand, *Ind. Gen. Phan.* 162.

Living species: 3; N. America; 2, E.; 1, E. and W. Sts.

Thaspium aureum (LINN.) NUTT. Gen. I, 196 (1818).

Smyrnium aureum LINN. Spec. 262 (1753).
Smyrnium luteum MUHL. Ind. Fl. Lanc. (1800).
Sison trifoliatum MICHX. Fl. N. Am. I, 168 (1803).

Wats. and Coult., Gray's Man. 6 ed. 204;; Mac., Fl. Can. I, 181, 534, II, 325; Britt., Fl. N. J. 116; Upham, Fl. Minn. 62; Chap., Fl. S. St. 163; Cov., Fl. Ark. 186; Wats., Bibl. Ind. I, 433; C. and R., Rev. N. A. Umb. 28.

North America: N. Eng. to N. J. and Fla.; W. to Mississippi valley.

Minn. valley: Throughout; moist banks and shores of lakes.

HERB.: *Taylor 952*, Glenwood; *Ballard 4*, Chaska; *Sheldon 886*, Sleepy Eye; *Leiberg 22*, Blue Earth Co.; *Holzinger 87*, Winona Co.; *Kassube 100*, Minneapolis; *Oestlund 68*, Ramsey Co.; *Herb. Sheld. 1890*, Minneapolis; *Herb. Wickersheim 53*, Idlewild.

Thaspium aureum (LINN.) NUTT. var. **cordatum** (WALT.) B. S. P. Cat. N. Y. (1888).

Smyrnium cordatum WALT. Fl. Car. 114 (1788).
S. trifoliatum MUHL. Cat. 31 (1813).
Thaspium cordatum T. and G. Fl. I, 615 (1838).
T. trifoliatum GRAY, Man. 5 ed. 195 (1867) *in part.*
T. aureum var. *trifoliatum* COULT. and ROSE, Rev. Umbel. (1889).

Wats. and Coult., Gray's Man. 6 ed. 204; Upham, Fl. Minn. 62; Mac., Fl. Can. I, 181; II, 326; Chap., Fl. S. St. 163; Coult., Fl. Colo. 117; Britt., Fl. N. J. 117; Roth., Wheel. Exp. 134; Wats., King. Exp. 125; Cov., Fl. Ark. 186; Wats., Bibl. Ind. I, 433.

North America: N J. to Ill. and Minn.; Colo., Mont. to Rockies and Oregon; S. to Ark.; Brit. Col.

Minn. valley: Throughout; woods, banks and copses; gravelly soil.

HERB.: *Sheldon 943*, Redwood Falls; *Sheldon 1362*, Lake Benton; *Ballard 571*, Prior's lake, Scott Co.; *Sandberg 220*, Cannon Falls; *Huntington 4*, Rock Co.; *Kassube 101*, Minneapolis; *MacM.* and *Sheld. 55*, Brainerd; *Herb. Moyer 91*, Montevideo.

Thaspium barbinode (MICHX.) NUTT. Gen. I, 196 (1818).

Ligusticum barbinode MICHX. Fl. N. Am. I, 167 (1803).
Smyrnium barbinode MUHL. Cat. 31 (1813).

Wats. and Coult., Gray's Man. 6 ed. 204; Mac., Fl. Can. I, 181, 534; Britt., Fl. N. J. 117; Webb., Fl. Neb. 124; Upham, Fl. Minn. 62; Chap., Fl. S. St. 163; Cov., Fl. Ark. 186; Wats., Bibl. Ind. I, 434; C. and R., Rev. N. A. Umb. 84.

North America: S. Ont., N. Y., N. J. to Fla.; W. to Minn. and Neb.

Minn. valley: E. and C. districts at least to Lac Que Parle and Pomme des Terres valleys; riverbanks and shores.

HERB.: *Sheldon 989*, Sleepy Eye; *Sheldon 1180*, New Ulm; *Taylor 957*, Glenwood; *Taylor 762*, Glenwood; *Sheldon 791*, Sleepy Eye; *Sandberg 219*, Red Wing.

ZIZIA KOCH, Nov. Act. Cur. XII, 128 (1825).

Baillon, *Hist. Pl.* VII, 120; (sub *Carum* LINN.); Benth. and Hook., *Gen. Pl.* I, 891; (sub *Carum* Linn.); Durand, *Ind. Gen. Phan.* 159 (sub *Carum* Linn.).

Living species: 2; North America.

Zizia cordata KOCH, Umbel. 129 (1825).

Thaspium trifoliatum var. *apterum* GRAY, Man. 5 ed. 195 (1868).
Carum cordatum B. and H. Gen. Pl. I, 891 (1862).

Wats. and Coult., Gray's Man. 6 ed. 208; Britt., Fl. N. J. 117; Mac., Fl. Can. I, 181 *in part;* Upham, Fl. Minn. 62; Coult., Fl. Colo. 117 *in part*; Chap., Fl. S. St. 163 *in part;* Coult., Fl. Tex. 147; Wats., Bibl. Ind. I, 435; C. and R., Rev. N. Am. Umb. 127.

North America: N. Br. to N. J. and Fla.; W. to Saskatchewan, Colo. and Tex.

Minn. valley: S. and S. central districts; possibly throughout E. half; thickets and gravelly banks in shaded places.

HERB.: *Taylor 348*, Janesville.

Zizia aurea KOCH, Umbel. 129 (1825).

Thaspium aureum var. *apterum* GRAY, Man. 5 ed. 195 (1869).
Carum aureum B. and H. Gen. Pl. I, 829 (1862).

Wats. and Coult., Gray's Man. 6 ed. 208; Britt., Fl. N. J. 117; Upham, Fl. Minn. 62; Mac., Fl. Can. I, 534; II, 326; Chap., Fl. S. St. 163 *in part*; Webb., Fl. Neb. 124; Coult., Fl. Tex. 147; Wats., Bibl. Ind. I, 434; C. and R., Rev. N. A. Umb. 127.

North America: N. Br., N. Eng., N. J. to Fla.; W. to Peace and Saskatchewan rivers; S. to Minn., Neb. and Tex.

Minn. valley: S. W. and W. regions; to New Ulm and B. E. Co.; prairie districts; moist banks and shores of lakes.

HERB.: *Moyer 92*, Montevideo; *Oestlund 351*, Hennepin Co.

PIMPINELLA LINN. Gen. 236 (1737).

Bunium KOCH, Syn. Fl. Germ. ed. II, 315 (1848).
Sisarum TAUSCH, Flora, 355 (1834).
Acronema EDGEW. Trans. Linn. Soc. XX, 51 (1851).
Lereschia BOISS. Ann. Sci. Nat. ser. 3, I, 127 (1844).
Reutera BOISS. Elench. 46 (1838).
Tragium SPRENG. Prod. Umb. 26 (1813).
Ledebouria LINK, Enum. Hort. Berol. I, 286 (1821).
Chesneya BERTOL. Misc. Bot. I, 17 (1842).
Gaytania MUNST. Bot. Zeit. 730 (1843).
Gymnosciadium HOCHST. Flora, 20 (1844).
Anisum ECKL. and ZEYH. Enum. Afr. 341 (1837).
Petrosciadium EDGEW. Trans. Linn. Soc. XX, 51 (1851).
Tragopsis POMEL, ex Durand, Ind. Gen. Phan. 159 (1888).
Murrithia ZOLL. Nat. Neerl. ex Hassk. Flora, 601 (1847).
Tragoselinum POMEL, ex Dur. l. c. (1888).
Anisometros HASSK. Flora, 602 (1847).
Platyraphe MIQ. ex Dur. l. c. (1888).
Heterachaena ZOLL. l. c. (1847).

Baillon, *Hist. Pl.* VII, 119 (*sub Carum* Linn.); Benth. and Hook., *Gen. Pl.* I, 893; Durand, *Ind. Gen. Phan.* 159.

Living species: 75±; N. hemisphere; also, S. Africa and S. America. North America, 3; E. Sts., 2; W. Sts., 2; Russia, 15; Europe, 11?.

Pimpinella integerrima (LINN.) BENTH. and HOOK. Gen. Pl. I, 894 (1862).

Smyrnium integerrimum LINN. Spec. 263 (1753).

Zizia integerrima DC. Rapp. Pl. Rar. Jard. Gen. III, 7 (1826).

Wats. and Coult., Gray's Man. 6 ed. 206; Mac., Fl. Can. I, 180; Upham, Fl. Minn. 62; Chap., Fl. S. St. 163; Cov., Fl. Ark. 185; Wats., Bibl. Ind. I, 430; C. and R., Rev. N. A. Umb. 109.

North America: Q., Ont. to N. Eng. and N. J. to Miss.; W. to Minn., Neb., Kan. and Ark.

Minn. valley: Reported from E. edge and S. E. district; rare and local; rocky hillsides.

HERB.: *Sandberg 221*, Belle creek.

CICUTA LINN. Gen. 222 (1737).

Cicutaria TOURN. Inst. 322 (1700) *in part.*

Baillon, *Hist. Pl.* VII, 221; Benth. and Hook., *Gen. Pl.* I, 889; Durand, *Ind. Gen. Phan.* I, 158.

Living species: 6; N. hemisphere; N. America, 3; 1 only E. Sts.; 1 only W. Sts.; 1 common to both. Russia, 2; Russian Europe, 2; Europe, 2; W. Tex., 1; Pl. Wheel., 1; Pl. King, 1.

Cicuta bulbifera LINN. Spec. 255 (1753).

Cicutaria bulbifera LAM. Enc. Meth. II, 3 (1786).

Keraskomion bulbiferum RAF. N. Fl. IV, 21 (1836).

Wats. and Coult., Gray's Man. 6 ed. 208; Britt., Fl. N. J. 114; Mac., Fl. Can. I, 182; Upham, Fl. Minn. 62; Wats., Bibl. Ind. I, 416; C. and R., Rev. N. A. Umb. 130.

North America: N. S., N. Br., Q., Ont. to Del. and N. J.; W. to Hudson Bay, Saskatchewan, Minn. and Iowa.

Minn. valley: Forest district and N. W. district; absent S. W.; wet meadows, marshes and swamps.

HERB.: *Ballard 826*, Page lake, Carver Co.; *Ballard 727*, Benton, Carver Co.; *Ballard 677*, Waconia; *Taylor 1003*, Glenwood; *Herrick 121*, Minneapolis; *Holzinger 88*, Winona Co.; *Sandberg 223*, Goodhue Co.; *Holzinger 89*, Winona Co.; *Leiberg 23*, Blue Earth Co.

Cicuta virosa LINN. var. **maculata** (LINN.) COULT. and ROSE, Rev. Umbel. 130 (1889).

Cicuta maculata LINN. Spec. 256 (1753).

Cicutaria maculata LAM. Enc. Meth. II, 2 (1786).

Sium (?) *douglasii* DC. Prodr. IV, 125 (1830).

Wats. and Coult., Gray's Man. 6 ed. 208; Mac., Fl. Can. I, 181, II, 326; Upham, Fl. Minn. 62; Webb., Fl. Neb. 124; Chap., Fl. S. St. 161; Coult., Fl. Colo. 116; Brew. and Wats., Fl. Calif. I, 260; Britt., Fl. N. J. 114; Coult., Fl. Tex. 147; Roth., Wheel. Exp. 132; Wats., King Exp. 121; Cov., Fl. Ark. 185; Wats., Bibl. Ind. I, 416; Hart., Fl. Scand. I, 150 (*spec.*).

North America: Atl. provinces to Coast range of Brit. Col.; Mackenzie river to 64° N. lat.; U. S. throughout to Fla., Miss. and Tex.

Minn. valley: Throughout; wet meadows and bogs; abundant.

HERB.: *Ballard 372,* Helena, Scott Co.; *Ballard 629,* Chaska; *Ballard 350,* Helena, Scott Co.; *Taylor 591,* Minnesota lake; *Taylor 330,* Janesville; *Taylor 990,* Glenwood; *Taylor 276,* Janesville; *Sheldon 528,* Waseca; *Sheldon 1290,* Lake Benton; *Sheldon 752,* Sleepy Eye; *Taylor 760,* Glenwood; *Kassube 102,* Minneapolis; *Bailey 251,* Vermilion lake; *Oestlund 69,* Minneapolis; *Sandberg 222,* Cannon Falls; *MacM.* and *Sheld. 40,* Brainerd; *Herb. Sheld. 1698,* Minneapolis; *Herb. Moyer 93,* Montevideo.

SIUM LINN. Gen. 219 (1737).

Berula KOCH, M. and K. Deutschl. Fl. II, 433 (1826).
Sisarum TOURN. Inst. 308 (1700).

Baillon, *Hist. Pl.* VII, 222; Benth. and Hook., *Gen*, *Pl.* I, 893; Durand, *Ind. Gen. Phan.* 159.

Living species: 6; N. hemisphere and S. Africa. N. America, 2; 1, W. Sts.; 1, E. and W. Sts. Russia, 5; Europe, 3; Russian Europe, 3.

Sium angustifolium LINN. Spec. 2 ed. 1672 (1762).

Berula angustifolia KOCH, Deutsch. Fl. II, 455 (1826).
Sium pusillum NUTT. T. and G. Fl. I, 611 (1838).

Wats. and Coult., Gray's Man. 6 ed. 207; Upham, Fl. Minn. 63; Brew. and Wats., Fl. Calif. I, 260; Coult., Fl. Colo. 115; Hook., Fl. Gt. Brit. 173; Mac., Fl. Can. I, 534; Coult., Fl. Tex. 148; Led., Fl. Ross. II, 258; Wats., King Exp. 121; Roth, Wheel. Exp. 133; Cov., Fl. Ark. 185; Wats., Bibl. Ind. I, 415; C. and R., Rev. N. Am. Umb. 133; Hart., Fl. Scand. I, 154; Webb., Appx. Neb. 33.

Europe and Siberia.

North America: Ont. to N. Eng., Minn. and Colo.; S. to Tex. and Mex., and in Calif.

Minn. valley: S. central district; local in region of Mankato and Kasota.

HERB.: *Sandberg 226,* Goodhue Co.; *Grant 1,* Vickerman's spring; *Leiberg 24,* Blue Earth Co.

Sium cicutaefolium K. C. GMEL. Syst. II, 482 (1806).

? *S. suave* WALT. F. Car. 115 (1788).
S. lineare MICHX. Fl. N. Am. I, 167 (1803).
S. tenuifolium MUHL. Cat. 30 (1813).
S. latifolium BIGEL. Fl. Bost. 69 (1824).
S. rugosum RAF. Med. Bot. II, 264 (1830).

Wats. and Coult., Gray's Man. 6 ed. 207; Britt., Fl. N. J. 114; Mac., Fl. Can. I, 182; Chap., Fl. S. St. 162; Brew. and Wats., Fl. Calif. I, 261; Coult., Fl. Colo. 116; Led., Fl. Ross. II, 260; Herd., Fl. Eur. Russ. 56; Coult., Fl. Tex. 146; Roth., Wheel. Exp. 133; Wats., King Exp. 121; Wats., Bibl. Ind. I, 433; C. and R., Rev. Umb. 123.

E. Russia, Altai Sib. and Dahuria.

North America: Labrador and N. Eng. to N. J., Fla. and Miss.; W. to Peace river, N. W. T., and S. throughout U. S. to Tex. and S. Calif.

Minn. valley: Throughout; in edges of sloughs, swamps and wet meadows.

HERB.: *Ballard 897*, Waconia; *Ballard 420*, New Prague, Scott Co.; *Sheldon 1258*, Lake Benton; *Sheldon 1072*, Springfield; *Taylor 112*, Janesville; *Sheldon 1526*, Lake Benton; *Roberts 42*, Devil's Neck river; *Oestlund 70*, Hennepin Co.; *Roberts 43*, Stewart river; *Bailey 420*, Long lake; *Sandberg 224*, Vasa; *Sandberg 225*, Goodhue Co.

DEERINGIA ADANS. Fam. Pl. II, 498 (1763).
? **Alacospermum** NECK. Elem. (1790).
Cryptotaenia DC. Prodr. IV, 118 (1830).

Benth. and Hook. *Gen. Pl.* I, 896; Durand, *Ind. Gen. Phan.* 159; O. Kuntze, *Rev. Gen.* I, 266.

Living species: 1; N. America and Japan.

Deeringia canadensis (LINN.) OK. Rev. Gen. I, 266 (1891).
Sison canadense LINN. Spec. 252 (1753).
Sium canadense LAM. Enc. Meth. I, 407 (1783).
Cicuta perennans WALT. Fl. Car. 116 (1788).
Cryptotaenia canadensis DC. Mem. Umbel. 42 (1829).
Mesodiscus simplex and *proliferus* RAF. N. Fl. IV, 20 (1836).

Wats. and Coult., Gray's Man. 6 ed. 207; Britt., Fl. N. J. 115; Mac., Fl. Can. I, 182; Upham, Fl. Minn. 63; Webb., Fl. Neb. 123; Chap., Fl. S. St. 161; Forbes and Hems., Fl. Sin. 329; Coult., Fl. Tex. 147; Cov., Fl. Ark. 185; Wats., Bibl. Ind. I, 417; C. and R., Rev. N. A. Umb. 131.

China and Japan.

North America: N. Br., Q., Ont. to N. Eng., N. J. and Ga.; W. to Saskatchewan?, Minn., Neb., E. Kan., Ark., Miss. and Tex.

Minn. valley: Throughout; thickets and edges of woods.

HERB.: *Taylor 999*, Glenwood; *Taylor 274*, Janesville; *Sheldon 236*, Lake Washington, Blue Earth Co.; *Sheldon 888*, Sleepy Eye; *Ballard 208*, Jordan; *Taylor 666*, Cobb river, Blue Earth Co.; *Taylor 806*, Glenwood; *Holzinger 90*, Winona Co.; *Oestlund 71*, Hennepin Co.; *Sandberg 227*, Chisago Co.; *Herb. Sheld. 1772*, Ft. Snelling.

MYRRHIS SCOP. Fl. Carn. I, 207 (1760).

Lindera ADANS. Fam. Pl. II, 499 (1763).
Osmorhiza RAF. Journ. Phys. LXXXIX, (1819).
Uraspermum NUTT. Gen. I, 192 (1818) *not Scop.*
Glycosma NUTT. T. and G. Fl. Am. I, 639 (1838).
Spermatura REICH. Consp.

Baillon, *Hist. Pl.* VII, 233; Benth. and Hook., *Gen. Pl.* I, 897; Durand, *Ind. Gen. Phan.* 160; O. Kuntze, *Rev. Gen.* I, 270.

Living species: 10; temperate N. hemisphere; S. America. N. America, 6; E. Sts., 2; W. Sts., 4.

Myrrhis claytoni MICHX. Fl. N. Am. I, 170 (1803).

Scandix dulcis MUHL. Cat. 31 (1813).
Osmorhiza dulcis RAF. Sp.? (1817).
Uraspermum hirsutum BIGEL. Fl. Bost. ed. 2, 112 (1824).
Osmorhiza brevistylis DC. Prodr. IV, 232 (1830).
O. claytoni B. S. P. Cat. N. Y. (1888).
Uraspermum aristatum var. *brevistyle* OK. Rev. Gen. I, 270 (1891).

Wats. and Coult., Gray's Man. 6 ed. 210; Mac., Fl. Can. I, 183; Britt., Fl. N. J. 115; Upham, Fl. Minn. 63; Chap , Fl. S. St. 166; Wats., King Exp. 122; Cov., Fl. Ark. 185; Wats., Bibl. Ind. I, 427; C. and R., Rev. N. A. Umb. 118.

Japan?; Asia?.

North America: N. S., N. Br., Q., Ont. to N. J., Va. and N. Car.; W. to Rocky mts. in Canada; Dak., Kan., Ark. and Tex.

Minn. valley: Throughout; habitat like that of *M. aristata* (Thunb.).

HERB.: *Sheldon 83*, Elysian; *Sheldon 174*, Eagle lake, Blue Earth Co.; *Sheldon 137*, Madison Lake; *Sheldon 887*, Sleepy Eye; *Ballard 700*, Waconia; *Ballard 75*, Chaska; *Kassube 104*, Minneapolis; *Oestlund 72*, Hennepin Co; *Holzinger 92*, Winona; *Sandberg 220*, Cannon Falls; *Herb. Sheld. 1773*, Ft. Snelling; *Herb. Moyer 94*, Montevideo.

Myrrhis aristata (THUNB.).

Chaerophyllum aristatum THUNB. Fl. Jap. (1784).
Uraspermum claytoni NUTT. Gen. I, 193 (1818).
Myrrhis longistylis TORR. Fl. U. S. 310 (1824).
Osmorhiza villosa and *cordata* RAF. Med. Bot. II, 249 (1830).
O. longistylis DC. Prodr. IV, 232 (1830).
Uraspermum aristatum OK. Rev. Gen. I, 270 (1891) *part.*

Wats. and Coult., Gray's Man. 6 ed. 210; Britt., Fl. N. J. 115; Mac., Fl. Can. I, 183, 534; Upham, Fl. Minn. 63; Webb., Fl. Neb. 124; Coult., Fl. Colo. 116; Cov., Fl. Ark. 185; Wats., Bibl. Ind. I, 427; C. and R., Rev. Umb. N. A., 118.

Japan.

North America: N. S., N. Br., Q., Ont. to N. J. and mts. of N. Car.; W. to Saskatchewan, N. W. T., Minn., Dak., Neb. and Ark.

Minn. valley: Throughout; rich woodland and river-banks.

HERB.: *Ballard 134,* Chaska; *Taylor 894,* Glenwood; *Sheldon 431,* Janesville; *Kassube 103,* Minneapolis; *Holzinger 91,* Winona Co.; *Sandberg 228,* Cannon Falls; *Herb. Wickersheim 54,* Ash lake, Lincoln Co.

LXXXI. CORNACEAE. Dogwood Family.

Endlicher, *Gen. Pl.* 798 (1836–40); Endlicher, *Gen. Pl.* 1184 (1836-40)—*Alangieae*; Endlicher, l. c. 288—*Garryaceae*; Endlicher, l. c. 295—*Nyssaceae*; Bentham and Hooker, *Gen. Plant.* I, 927 (1862–67); Baillon, *Hist. Pl.* VII, 66 (1880).

Genera: 8; temperate regions, especially in N. hemisphere.

Species: 85± living; 30–40 fossil in Cretaceous, Tertiary and Quaternary rocks.

CORNUS LINN. Gen. 80 (1737).

Benthamia LINDL. Bot. Reg. 1579 (1833).
Microcarpium SPACH, Suit. Buff. VIII, 90 (1839).
Benthamidia SPACH, Suit. Buff. VIII, 90 (1839).

Baillon, *Hist. Pl.* VII, 79; Benth. and Hook., *Gen. Pl.* I, 950; Durand, *Ind. Gen. Phan.* 168; Schenck, *Palaeophyt.* 614.

Living species: 25±; Europe; Asia to Himalayas; N. America; Mexico; Peru. N. America, 18; Canada, 13; E. Sts., 9; S. Sts., 6; California, 7; Pl. King., 2; Pl. Wheel., 1; W. Tex., 4; Rocky mts., 3; Russia, 6; Europe, 4; Russian Europe, 4.

Fossil species: Several descr. from Upper Cretaceous of Greenland (*Heer*); Tertiary, many species, France (*Saporta*); Greenland, Alaska, Spitzbergen, Wyoming, Saghalin, Switzerland (*Heer, Lester Ward, Lesquereaux, Newberry*); Java (*Göppert*); 30–40 spec.

Cornus canadensis LINN. Spec. 117 (1753).

C. herbacea var. *canadensis* PALL. Fl. Ross. I, 52 (1784).

Wats. and Coult., Gray's Man. 6 ed. 214; Mac., Fl. Can. I, 190, 538; Britt., Fl. N. J. 120; Coult., Fl. Colo. 122: Brew. and Wats., Fl. Calif. I, 274; Upham, Fl. Minn. 64; Forbes and Hems., Fl. Sin. 344; Led., Fl. Ross. II, 378; Miyabe, Fl. Kur. 237; Wats., Bibl. Ind. I, 438.

Manchuria; Mid. Japan; E. Corea; Kurile Isls.

North America: Atl. to Pac. in Can.; Alaska; S. to N. J., Ind., Minn., Colo. and Calif.

Minn. valley: N. W. and N. E. districts; rare or local; cold woods and with tamarack (*Larix americana*).

HERB.: *Taylor 1110*, Glenwood; *Roberts 46*, Poplar river; *Oestlund 74*, Ramsey Co.; *Winchell 7*, Duluth; *Leonard 20*, Duluth; *Roberts 47*, Duluth; *Arthur 15*, Vermilion lake; *Bailey 287*, Vermilion lake; *Sandberg 235*, Tower; *Manning 5*, Mount Pleasant.

Cornus alternifolia LINN. f. Suppl. 125 (1781).

C. alterna MARSH. Arbust. Amer. 35 (1785).

Wats. and Coult., Gray's Man. 6 ed. 215; Mac., Fl. Can. I, 191, 538; Britt., Fl. N. J. 121; Upham, Fl. Minn. 64; Chap., Fl. S. St. 167; Wats., Bibl. Ind. I, 437.

North America: N. S., N. Br., Q., Ont. to S. Man.; S. to. N. J., Ga., Alab.; W. to Minn. and Mo.

Minn. valley: Forest district and W. to Cottonwood and Chippewa valleys; shaded banks and hillsides.

HERB.: *Sheldon 508*, Waseca; *Sheldon 720*, Sleepy Eye; *Ballard 158*, Chaska; *Holzinger 98*, Winona; *Sandberg 240*, Cannon Falls.

Cornus candidissima MARSH. Arbust. Amer. 35 (1785).

? *C. racemosa* LAM. Enc. Meth. II, 116 (1786).
C. stricta LAM. Enc. Meth. II, 116 (1786).
C. paniculata L'HER. Corn. 9 (1788).
C. albida EHRH. Beitr. IV, 16 (1789).

Wats. and Coult., Gray's Man. 6 ed. 215; Britt., Fl. N. J. 120; Webb., Fl. Neb. 124; Mac., Fl. Can. I, 191; Upham, Fl. Minn. 64; Chap., Fl. S. St. 167; Coult., Fl. Tex. 151; Cov., Fl. Ark. 187; Wats., Bibl. Ind. I, 439.

North America: N. S., Ont. to N. J. and N. Car.; W. to Minn., Neb., Ark. and Tex.

Minn. valley: Throughout, but rare W. of forest district and Cottonwood river; thickets, shores of lakes, along streams.

HERB.: *Ballard 743*, Waconia; *Ballard 353*, Helena, Scott Co.; *Ballard 97*, Shakopee; *Taylor 334*, Janesville; *Sheldon 716*, Sleepy Eye; *Taylor 260*, Janesville; *Sheldon 390*, Madison Lake; *Sheldon 323*, Smith's Mill, Blue Earth Co.; *Oestlund 78*, Hennepin Co.; *Oestlund 79*, Ramsey Co.; *Herrick 124*, Minneapolis; *Herrick 125*, Minneapolis; *Holzinger 97*, Winona Co.; *Moyer 260*, Big Spring, Lac Que Parle Co.

Cornus asperifolia MICHX. Fl. N. Am. I, 93 (1803).

C. sericea var. *asperifolia* DC. Prodr. IV, 272 (1830).

Wats. and Coult., Gray's Man. 6 ed. 214; Mac., Fl. Can. I, 191; Webb., Fl. Neb. 124; Chap., Fl. S. St. 167; Upham, Fl. Minn. 64; Coult., Fl. Tex. 150; Cov., Fl. Ark. 186; Wats., Bibl. Ind. I, 437.

North America: Ont. to N. J., N. Car. and Fla.; W. to Minn., Neb., Ark. and Tex.

Minn. valley: Reported from forest district and to Blue Earth Co.; rare or local; dry or gravelly places.

HERB. *Sandberg 239,* Cannon Falls.

Cornus stolonifera MICHX. Fl. N. Am. I, 92 (1803).

C. sanguinea MARSH. Arbust. Amer. 36 (1785).
C. alba LAM. Enc. Meth. II, 115 (1786) *in part.*
? *C. baileyi* COULT. and ROSE, Bot. Gaz. XX, 37 (1890).

Wats. and Coult., Gray's Man. 6 ed. 214; Britt., Fl. N. J. 120; Webb., Fl. Neb. 124; Mac., Fl. Can. I, 191; Coult., Fl. Colo. 122; Upham, Fl. Minn. 64; Wats., Bibl. Ind. I, 440.

North America: Atl. to Pac. in Can.; Mackenzie river to lat. 64° N.; W. to Colo., Minn., Neb. and Arizona; S. to N. J.

Minn. valley: Forest district and W. to Cottonwood valley; wet meadows, edges of sloughs and bogs.

HERB: *Ballard 55,* Chaska; *Taylor 805,* Glenwood; *Sheldon 1583,* Lake Benton; *Sheldon 719,* Sleepy Eye; *Bailey 12,* Vermilion lake; *Juni 5,* Duluth; *Bailey 250,* Vermilion lake; *Oestlund 77,* Hennepin Co.; *Holzinger 94,* Winona; *Kassube 109,* Minneapolis; *Holzinger 95,* Winona Co.; *Sandberg 838,* Goodhue Co.; *Holzinger 96,* Winona Co.; *Herb. Sheld. 1886,* Minneapolis.

Cornus sericea LINN. Mant. II, 199 (1767).

C. alba WALT. Fl. Car. 88 (1788).
C. lanuginosa MICHX. Fl. N. Am. I, 92 (1803).
C. obliqua RAF. Ann. Nat. 13 (1820).

Wats. and Coult., Gray's Man. 6 ed. 214; Britt., Fl. N. J. 120; Mac., Fl. Can. I, 191; Webb., Fl. Neb. 124; Chap., Fl. S. St. 167; Upham, Fl. Minn. 64; Coult., Fl. Tex. 150; Wats., King Exp. 132; Cov., Fl. Ark. 187; Wats., Bibl. Ind. I, 436.

North America, N. Br., Q., Ont. to N. Eng., N. J., Fla. and La.; W. to Minn., Dak., Neb., Ark. and E. Tex.

Minn. valley: Throughout; wet meadows and edges of quaking bogs.

HERB.: *Kassube 108,* Minneapolis; *Herrick 123,* Minneapolis; *Oestlund 76,* Hennepin Co.; *Bailey 64,* Vermilion lake; *Sandberg 237* Red Wing; *Herb. Sheld. 1287,* Minneapolis; *Herb. Wickersheim 56,* Idlewild.

Cornus circinatus L'HER. Corn. 7 (1788).

Wats. and Coult., Gray's Man. 6 ed. 214; Mac., Fl. Can. I, 190; Britt., Fl. N. J. 120; Upham, Fl. Minn. 64; Wats., Bibl. Ind. I, 438.

North America: N. S., Q., Ont. to N. J. and Va.; W. to L. Superior reg., Minn., Dak. and Mo.

Minn. valley: Throughout; thickets, edges of woods and dry copses.

HERB.: *Taylor 934,* Glenwood; *Sheldon 85,* Elysian; *Taylor 798,* Glenwood; *Herrick 122,* Minneapolis; *Sandberg 236,* Chisago Co.; *Roberts 48,* Carlton's Peak; *Roberts 49,* Duluth; *Oestlund 75,* Hennepin Co.

METACHLAMYDEAE.

LXXXII. PIROLACEAE. Pine-Sap Family.

Lindl. *Veg. King.* 450, 452 (1846)—*Monotropaceae;* Bentham and Hooker, *Gen. Pl.* II, 581, 604 (1876)—Trib. V, *Ericaceae* and *Monotropeae;* Drude *in Engler and Prantl, Nat. Pflanz.* IV, 1, 2 (1889); Baillon, *Hist. Pl.* XI, 150. (1892).

Genera: 10; N. boreal and temperate regions to Orizaba mt. and Himalayas; especially N. American; N. to Arctic circle.

Species: 30± living; 1–2 doubtful, extinct; Tertiary of Europe and Polar regions?

PSEVA RAF. Jour. Phys. LXXIX, 261 (1809).

Chimaphila PURSH, Fl. Am. Sept. I, 279 (1814).

Benth. and Hook., *Gen. Pl.* II, 603; Durand, *Ind. Gen. Phan.* 246; Engler and Prantl. *Nat. Pflanz.* 4, I, 8; O. Kuntze, *Rev. Gen.* II, 390; Baillon, *Hist. Pl.* XI, 151 (*sub Pirola*).

Living species: 4; Europe, N. America to Mexico; Japan and Corea. N. America, 3; Canada, 3; California, 2; E. Sts., 2; S. Sts., 2; Pl. King, 1.

Pseva maculata (LINN.) OK. Rev. Gen. II, 390 (1891).

Pyrola maculata LINN. Spec. 565 (1753).

Chimaphila maculata PURSH. Fl. Am. 300 (1814).

Wats. and Coult., Gray's Man. 6 ed. 323; Britt., Fl. N. J. 163; Chap., Fl. S. St. 267; Upham, Fl. Minn. 95; Mac., Fl. Can. I, 306; II, 309; Cov., Fl. Ark. 201; Gray, Syn. Fl. II, 1, 45.

North America: Ont. to Minn., S. to N. Eng., Ga. and Miss.; W. to Ark.

Minn. valley: Reported from N. E. district and N. edge; no Minn. specimens seen.

Pseva umbellata (LINN.) OK. Rev. Gen. II. 390 (1891).

Pyrola umbellata LINN. Fl. Dan. 1336 (1757).

Chimaphila corymbosa PURSH, Fl. Am. 300 (1814).

C. umbellata NUTT. Gen. I, 274 (1818).

Pyrola corymbosa BERTOL. Misc. III, 12 (1844).

Wats. and Coult., Gray's Man. 6 ed. 323; Britt., Fl. N. J. 163; Mac., Fl. Can. I, 306; Chap., Fl. S. St. 267; Upham, Fl. Minn. 95; Brew. and Wats., Fl. Calif. I, 459; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 84; Wats., King Exp. 212; Engl. Drude, Nat. Pflanz. IV. 1, 8; Gray, Syn. Fl. II, 1, 45.

N. Europe to Switzerland, Bohemia, Poland; N. Asia to Japan.

North America: N. S., N. Br. Q., Ont. to Brit. Col.

and Vancouver; S. in Sierras to Mendocino Co., Calif.; to Minn. and Wisc., and E. to N. Eng., N. J., Ga. and Mexico.

Minn. valley: Reported from N. edge and N. E. district; dry woods.

HERB.: *Roberts 85*, Minnesota Point; *Roberts 86*, Devil's Neck river; *Bailey 189*, Vermilion lake; *Bailey 416*, Long lake; *Sandberg 386*, White rock.

PIROLA LINN. Gen. 345 (1737).

Moneses SALISB. S. F. Gray, Nat. Arr. II, 403 (1821).
Actinocyclus KLOTZSCH, Monatb. Berl. 14 (1857).
Amelia and **Thelaia** ALEF. Linn. XXVIII, 18 (1852).

Benth. and Hook., *Gen. Pl.* II, 602, 603; Durand, *Ind. Gen. Phan.* 245, 246: Engler and Prantl, *Nat. Pflanz.* 4, I, 8 (Drude); Baillon, *Hist. Pl.* XI, 150.

Living species: 15–25; N. temperate and boreal regions, to Mexico and Himalayas. Europe, 5; Asia, 10; N. America, 8–14; Canada, 7–8; S. Sts., 1; Rocky mts., 6; E. Sts., 6; California, 5; Pl. Wheel., 3; Pl. King, 3.

Pirola secunda LINN. Spec. (1753).

Wats. and Coult., Gray's Man. 6 ed. 324; Britt., Fl. N. J. 163; Upham, Fl. Minn. 95; Mac., Fl. Can. I, 304; Coult., Fl. Colo. 230; Brew. and Wats., Fl. Calif. I, 460; Trautv., Fl. Sib. 81 in var.; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 256; Led., Fl. Ross. II, 930; Miyabe, Fl. Kur. 248; Herd., Fl. Eur. Ross. 84; Roth., Wheel. Exp. 184; Wats., King Exp. 211; Engl. Drude, Nat. Pflanz. IV, 1, 9; Gray, Syn. Fl. II, 1, 46: Hart., Fl. Scand. I, 324: Webb., Appx. Neb. 36.

N. Europe; Scand. to Mt. Olympus and Pyrenees; N. Asia to Manchuria, Japan, Corea and Saghalin.

North America: Greenland and Newf. to Mackenzie and Pac.; S. in Sierras to Donner Pass; S. in mts. to Colo. and N. Mex.; S. to Minn., Neb., Mich., Mo. and N. J.

Minn. valley: Forest district to Redwood Falls; rare; rich, damp woods and banks of streams.

HERB.: *Sandberg 385*, Cannon Falls; *Arthur 14*, Vermilion lake; *Roberts 82*, Black Point; *Roberts 83*, Grand Marais; *Roberts 84*, Knife river; *Bailey 166*, Vermilion lake; *Bailey 78*, Vermilion lake; *Bryant 1*, Minneapolis.

Pirola secunda LINN. var. **pumila** GRAY, Man. 5 ed. 302 (1867).

Wats. and Coult., Gray's Man. 6 ed. 324; Mac., Fl. Can. I, 304; Upham, Fl. Minn. 95; Gray, Syn. Fl. II, 1, 46.

Greenland, Labrador to Alaska; S. to L. Superior, Minn. and N. Y.; S. to Colo. and Calif. in mts.

Minn. valley: Reported from N. E. district; no Minn. specimens seen.

Pirola elliptica NUTT. Gen. I, 273 (1818).

P. rotundifolia MICHX. Fl. N. Am. I, 251 (1803) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 324; Britt., Fl. N. J. 163; Coult., Fl. Colo. 230; Mac., Fl. Can. I, 304; 563; Gray, Syn. Fl. II, 1, 47.

Japan.

North America: N. S., N. Br., Q., Ont. to Owen sound, S. Man. and valley of the Saskatchewan; S. in Rockies to N. Mex.; S. to Minn., Iowa, N. Eng., N. J. and Ind.

Minn. valley: Forest district and N. W. district; rich woods and tamarack swamps.

HERB.: *Ballard 874,* Waconia; *Ballard 414,* New Prague, Scott Co.; *Ballard 132,* Chaska; *Ballard 470,* Prior's lake, Scott Co.; *Ballard 402,* Jordan, Scott Co,; *Ballard 358,* Helena, Scott Co.; *Sheldon 612,* Wilton, Waseca Co.; *Taylor 382,* Janesville; *Leonard 31,* Fillmore Co.; *Kassube 156,* Minneapolis; *Herrick 187,* Minneapolis; *Sandberg 384,* Red Wing; *Herb. Sheld. 1686,* Minneapolis.

Pirola rotundifolia LINN. Lam. Ill. 367 (1791).

P. rotundifolia var. *incarnata* DC. Prodr. VII, 773 (1839).

Wats. and Coult., Gray's Man. 6 ed. 324; Britt., Fl. N. J. 162; Mac., Fl. Can. I, 305, 563; Coult., Fl. Colo. 230; Chap., Fl. S. St. 267; Brew. and Wats , Fl. Calif. I, 460. Forbes and Hems., Fl. Sin. II, 32; Led., Fl. Ross. II, 928; Trautv., Fl. Sib. 81 in var.; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 256; Herd., Fl. Eur. Russ. 84; Wats., King Exp. 211; Engl. Drude, Nat. Pflanz. IV, 1, 1; Gray, Syn. Fl. II, 1, 47, Hart., Fl. Scand. I, 323.

Europe except Greece and Turkey; N. Asia to China, Japan and Kamtk.

North America: Atl. to Pac. and Arctic circle in Can.; S. to N. J. and N. Ga.; S. to Oregon and Calif. and to Minn. and N. Mex. in mts.

Minn. valley: N. E. and N. W. districts and along N. edge; woods and tamarack swamps.

HERB.: *Taylor 1114,* Glenwood; *Juni 10,* Duluth; *Herrick 184,* St. Louis river; *Sandberg 382,* Chisago Co.; *Sandberg 383,* Cannon Falls; *Roberts 81,* Duluth; and in *forma incarnata* (DC.), *Ballard 143,* Chaska; *Ballard 413,* New Prague, Scott Co.

Pirola rotundifolia LINN. var. **uliginosa** (TORR.) GRAY, Man. 2 ed. 259 (1852).

P. uliginosa TORR. Fl. N. Y. I, 452 (1843).

P. obovata BERTOL. Misc. III, 11 (1844).

Wats. and Coult., Gray's Man. 6 ed. 324; Mac., Fl. Can. I, 305; Upham, Fl. Minn. 94; Coult., Fl. Colo. 231; Roth., Wheel. Exp. 184; Gray, Syn. Fl. II, 1, 48.

North America; N. Br. to Cariboo mts., Brit. Col.; S. to Minn. and N. Eng.

Minn. valley: N. E. district; tamarack swamps and woods.

HERB.: *Herrick 185*, Minneapolis; *Herrick 186*, Minneapolis.

MONOTROPA LINN. Gen. 315 (1737).

Hypopitys SCOP. Fl. Carn. I, 285 (1760).

Benth. and Hook., *Gen. Pl.* II, 607; Durand, *Ind. Gen. Phan.* 246; Engler and Prantl, *Nat. Pflanz.* 4, I, 10 (Drude); Schenck, *Palaeophyt.* 733 Baillon, *Hist. Pl.* XI, 152.

Living species: 3; N. America to Mexico; Europe; Asia to India and Japan. N. America, 3; 1 sp. endemic.

Fossil species: Miocene of Oeningen (*Heer*),

Monotropa uniflora LINN. Spec. 555 (1753).

M. morisoniana MICHX. Fl. N. Am. I, 226 (1803).

M. morisoni PERS. Syn. I (1805).

Wats. and Coult., Gray's Man. 6 ed. 325; Upham, Fl. Minn. 95; Britt., Fl. N. J. 164; Chap., Fl. S. St. 268; Mac., Fl. Can. I, 307; Coult., Fl. Colo. 231; Brew. and Wats., Fl. Calif. I, 463; Cov., Fl. Ark. 201; Forbes and Hems., Fl. Sin. II, 34; Engl. Drude, Nat. Pflanz. IV, 1, 10; Gray, Syn. Fl. II, 1, 49; Webb., Appx. Neb. 36; Coult., Fl. Tex. 254.

Asia; Japan to Himalayas and N. India; S. America.

North America: Anticosti, N. S., N. Br., Q., Ont. to S. Man., Oregon and Rockies; S. to Colo. and Mexico; S. to Minn., Neb., Mo., Ark., Tex., and E. to Miss., Fla. and Atl. coast.

Minn. valley: Forest district; rare; deep, rich woodland.

HERB.: *Bailey 156*, Vermilion lake; *Sandberg 387*, "Minnesota"; *Lange 5*, St. Anthony Park.

LXXXIII. ERICACEAE. Heath Family.

Endlicher, *Gen. Pl.* 750 (1836–40); Lindl., *Veg. Kingd.* 757 (1846)—*Vacciniaceae;* Bentham and Hooker, *Gen. Plant.* II, 564, 577 (1876)—excl. *Pirolaceae* and *Clethraceae;* Drude *in Engler and Prantl, Nat. Pflanz.* IV, 1, 15 (1889); Baillon, *Hist. Pl.* XI, 122 (1892) *in part.*

Genera: 65 living; 3 fossil; cosmopolitan.

Species: 1350±; rather more abundant in N. than in S. hemisphere; 30–40 fossil; doubtful.

LEDUM LINN. Gen. 342 (1737).

Dulia ADANS. Fam. Pl. II, 165 (1763).

Benth. and Hook.. *Gen. Pl.* II, 599; Durand, *Ind. Gen. Phan.* 245; Engler and Prantl, *Nat. Pflanz.* 4, I, 34 (Drude); Schenck, *Palaeophyt.* 728; Baillon, *Hist. Pl.* XI, 130.

Living species: 3; 2, N. America; 1, circumboreal.

Fossil species: Tertiary, Sagor, Radoboj (*Unger*); Miocene, Thüringen (*von Fritsch*).

Ledum latifolium AIT. Lam. Ill. 363 (1791).

L. groenlandicum RETZ. Scand. (1799).

L. palustre var. *latifolium* MICHX. Fl. N. Am. I (1803).

Wats. and Coult., Gray's Man. 6 ed. 321; Mac., Fl. Can. I, 301; Upham, Fl. Minn. 94; Engl. Drude, Nat. Pflanz. IV, 1, 34; Gray, Syn. Fl. II, 1, 43.

North America: Greenland, Labrador, Newf., N. Br. to Pac.; S. to Minn., Mich., N. N. Eng. and Penn.

Minn. valley: Far N. district and possibly N. W.; woods and barrens.

HERB.: *Roberts 80*, Duluth; *Bailey 257*, Vermilion lake; *Sandberg 381*, Chisago Co.; *MacM.* and *Sheld. 31*, Brainerd.

ANDROMEDA LINN. Gen. 344 (1737) em. BENTH. l. c. (1876).

Benth. and Hook., *Gen. Pl.* II, 587; Durand, *Ind. Gen. Phan.* 243; Engler and Prantl, *Nat. Pflanz.* 4, I, 42 (Drude); Schenck, *Palaeophyt.* 722; Baillon, *Hist. Pl.* XI, 131, *in part.*

Living species: 1; circumboreal and to temperate regions.

Fossil species: Numerous in Cretaceous of N. America; 10–20 (*Lesquereaux, Heer, Ward, Newberry*); Tertiary, Europe (*Saporta, Ettinghausen, Heer, Unger*); Switzerland, Spitzbergen, Alaska, Greenland; Tertiary N. America, Alaska, Florissant, etc.; 40–50 spec. described; to be much reduced.

Andromeda polifolia LINN. Spec. 393 (1753).

A. rosmarinifolia PURSH, Fl. Am. 291 (1814).

A. glaucophylla LINK, Enum. I, 394 (1821).

Wats. and Coult., Gray's Man. 6 ed. 316; Britt., Fl. N. J. 161; Mac., Fl. Can. I, 297; Upham, Fl. Minn. 94; Trautv., Fl. Sib. 80; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 252; Herd., Fl. Eur. Russ. 82; Engl. Drude, Nat. Pflanz. IV, 1, 44; Gray, Syn. Fl. II, 1, 31; Hart., Scand. Fl. I, 319.

Europe to Tyrol and Hungary; N. Asia.

North America: Labrador and Greenland to Pac. and Arctic ocean; S. to Minn., Penn. and N. J.

Minn. valley: N. E. district; rare; deep, rich woods or barrens.

HERB.: *Bailey 280*, St. Louis River; *Bailey 295*, St. Louis river; *Sandberg 380*, Chisago Co.

LYONIA NUTT. Gen. I, 266 (1818).

Cassandra and **Pieris** DON, Edin. Phil. Journ. XVII, 158–159 (1834).

? **Aegialea** KLOTZSCH, Walp. Ann. II, 1113 (1850).
Portuna NUTT. Trans. Phil. Soc. VIII (1843).

Benth. and Hook., *Gen. Pl.* II, 584–587; Durand, *Ind. Gen. Phan.* 243; Engler and Prantl, *Nat. Pflanz.* 4, I, 44; Baillon, *Hist. Pl.* XI, 133 (*sub Andromeda*).

Living species: 8–18?; N. America, E. Asia and 1 sp. circumboreal. N. America, 7; Canada, 3; E. Sts., 7; S. Sts., 7.

Lyonia calyculata (LINN.) REICH. Fl. Ex. I, 414 (1827).
Andromeda calyculata LINN. Spec. 566 (1753).
Chamaedaphne calyculata MOENCH, Meth. (1794).
Cassandra calyculata DON, Edinb. Journ. XVII, 159 (1834).

Wats. and Coult., Gray's Man. 6 ed. 318; Britt., Fl. N. J. 160; Mac., Fl. Can. I, 296; Chap., Fl. S St. 262; Upham, Fl. Minn. 93; Trautv., Fl. Sib. 80; Herd., Fl. Eur. Russ. 82; Gray, Syn. Fl. II, 1, 35.

N. Europe and N. Asia.

North America: Labrador to N. Br., Q., Ont., Brit. Col. and Alaska at Kotzebue Sound; S. to N. Eng., N. J. and Ga.; W. to Minn. and Man.

Minn. valley: N. E. district; rare; possibly also N. W.; bogs and edges of swamps.

HERB.: *Roberts 79*, Minnesota Point; *Bailey 228*, Vermilion lake; *Sandberg 379*, Chisago Co.

CHIOGENES SALISB. Trans. Hort. Soc. Lond. II, 94 (1812).
Phalerocarpus G. DON, Gen. Syst. III, 641 (1834).
Lasierpa TORR. Fl. N. Y. I, 450 (1843).

Benth. and Hook., *Gen. Pl.* II, 577; Durand, *Ind. Gen. Phan.* 242; Eng- and Prantl, *Nat. Pflanz.* 4, I, 47 (Drude); Baillon, *Hist. Pl.* XI, 183.

Living species: 1; N. America and Japan. (Some authorities regard the Japanese form as distinct. It seems, however, of varietal rank).

Chiogenes hispidula (LINN.) TORR. Fl. N. Y. I, 450 (1843).
Vaccinium hispidulum LINN. Spec. 500 (1753).
Arbutus filiformis LAM. Enc. Meth. I, 228 (1783).
A. thymifolia AIT. Hort, Kew. II, 72 (1789).
Oxycoccus hispidulus PERS. Syn. I, 419 (1805).
Chiogenes serpyllifolia SALISB. Trans. Hort. Soc. Lond. II, 94 (1812).
Gaultheria serpyllifolia PURSH, Fl. Am. 283 (1814).
Glycyphylla hispidula RAF. Am. Mo. Mag. (1819).
Phalerocarpus serpyllifolius DON, Syst. III, 841 (1834).
Chiogenes japonica GRAY, Syn. Fl. II, 1, 26 (1886).

Wats. and Coult., Gray's Man. 6 ed. 315; Mac., Fl. Can. I, 294, 561; Upham, Fl. Minn. 93; Britt., Fl. N. J. 159; Chap., Suppl. S. St. 633; Engl. Drude, Nat. Pflanz. IV, 1, 47; Gray, Syn. Fl. II, 1, 26.

Japan.

North America: Labrador, Newf., N. S., N. Br. to

West of Rockies, Selkirks, Columbia river and N. W. T.; S. to Minn., Penn., N. J. and in Appalachians to N. Car.

Minn. valley: N. W. and N. E.; tamarack swamps; rare; sphagnum marshes.

HERB.: *Roberts 76*, Devil's Neck river; *Sandberg 377*, Center City.

ARCTOSTAPHYLOS ADANS. Fam. Pl. II, 165 (1763).

Comarostaphylis ZUCC. Nov. Stirp. II. 24 (1843).
Mairania NECK. Elem. I, 219 (1790).
Zerobotrys NUTT. Trans. Phil. Soc. 2, VIII, 267 (1843).
Daphnidostaphylis KLOTZSCH, Linn XXIV, 78 (1850).
Xylococcus NUTT. Trans. Am. Phil. Soc. l. c. 258 (1843).

Benth. and Hook., *Gen. Pl.* II, 581; Durand, *Ind. Gen.* 242; Engler and Prantl, *Nat. Pflanz.* 4, I, 48; Schenck, *Palaeophyt.* 721; Baillon, *Hist. Pl.* IX, 191.

Living species: 18; North America, boreal regions principally; 1 sp. around N. hemisphere. California, 12; Canada, 4; E. Sts., 2.

Fossil species: *A. uva-ursi* in diluvial rocks of Europe, Bovey Tracy.

Arctostaphylos uva-ursi (LINN.) SPRENG. Syst. II, 287 (1825).

Arbutus uva-ursi LINN Spec. (1753).
Arctostaphylos officinalis WIMMER, Fl. Sib. 2 (1829).
Daphnidostaphylis fendleriana KLOTZSCH, Linn. XXIV, 81 (1850).

Wats. and Coult., Gray's Man. 6 ed. 315; Britt., Fl. N. J. 159; Mac., Fl. Can. I, 295; Upham, Fl. Minn. 93; Coult., Fl. Colo. 228; Brew. and Wats., Fl. Calif. I, 453; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 251; Miyabe, Fl. Kur. 247; Led., Fl. Ross. II, 909; Herd., Fl. Eur. Russ. 82; Wats., King Exp. 210; Roth., Wheel. Exp. 183; Engl. Drude, Nat. Pflanz. IV, I, 49; Gray, Syn. Fl. II, 1, 27; Hart., Fl. Scand. I, 319; Webb., Appx. Neb. 36.

Circumpolar; Scand. and Shetland to Montenegro and Bosnia; N. Asia to Kamt., Kuriles, Saghalin, Japan and Dahuria.

North America: Greenland and Newf. to Pac. and 64° N. lat.; S. to Calif. in Sierras; S. to N. Mex. in Rockies; E. to Minn., Neb., Mo., N. J.

Minn. valley: N. E. districts; rare; sandy or rocky knolls.

HERB.: *Sandberg 378*, White Rock; *Roberts 77*, Minnesota point; *Roberts 78*, Knife river.

OXYCOCCUS LUDW. ex O. Kuntze (1737).

Schollera ROTH, Tent. Fl. Germ. I, 170 (1788.)

Benth. and Hook., *Gen. Pl.* II, 575; Durand, *Ind. Gen. Phan.* 242;

Engler and Prantl, *Nat. Pflanz.* 4, I, 51 (Drude); O. Kuntze, *Rev. Gen.* II, 384; Schenck, *Palaeophyt.* 718; Baillon, *Hist. Pl.* IX, 183.

Living species: 3; Europe, Asia and N. America. Canada, 2; E. Sts., 3; S. Sts., 2; Japan and Siberia, 1; Europe, 1.

Fossil species: *O. oxycoccus*, Interglacial on the Elbe (*Schenck*).

Oxycoccus macrocarpus (AIT.) PURSH, Fl. Am. 264 (1814)

Vaccinium macrocarpon AIT. Hort. Kew. II, 13 (1789).

V. oxycoccus var. *oblongifolius* MICHX. Fl. N. Am. I, 234 (1803).

Wats. and Coult., Gray's Man. 6 ed. 314; Mac., Fl. Can. I, 293; Britt., Fl. N. J. 158; Upham, Fl. Minn. 92; Chap., Fl S. St. 259; Brew. and Wats., Fl. Calif. I, 450; Nym., Fl. Eur.; Miyabe, Fl. Kur. 246?; Engl. Drude, Nat. Pflanz. IV, 1, 51; Gray, Syn. Fl. II, 1, 26 and Suppl. II. 396.

Kuriles? Intro. in Netherlands. Batavia Isl.

North America: Newf., Anticosti, N. S., N. Br. to Thunder bay and Saskatchewan to Mackenzie river and Oregon? S. to N. Eng., N. J. and mts. of N. Car.; W. to Minn.

Minn. valley: Forest district and far N. W. to Glenwood?; peat bogs and tamarack swamps.

HERB.: *Sheldon 180*, Eagle lake, Blue Earth Co.; *Sheldon 326*, near Smith's Mills, Blue Earth Co.; *Ballard 542*, Spring lake, Scott Co.; *Oestlund 110*, Ramsey Co.; *Sandberg 372*, Chisago Co.; *Herb. Sheld. 1690*, Minneapolis.

Oxycoccus oxycoccus (LINN.) MACM. Torr. Bull. XIX (1891).

Vaccinium oxycoccus LINN. Spec. (1753).

Oxycoccus palustris PERS. Syn. 479 (1805).

O. vulgaris PURSH, Fl. Am. 264 (1814).

Wats. and Coult., Gray's Man. 6 ed. 314; Mac., Fl. Can. I, 293, Britt., Fl. N. J. 158; Upham, Fl. Minn. 92; Brew. and Wats., Fl. Calif. I, 450; Led., Fl. Ross. II, 905; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 250; Miyabe Fl. Kur. 246; Herd., Fl. Eur. Russ. 82; Engl. Drude, Nat. Pflanz. IV, 1, 51; Gray, Syn. Fl. II, 1, 25 and Suppl. II, 396; Hart., Fl. Scand. I, 318.

N. and C. Eur.; Shetland to Turkey; N. Asia to Dahuria, Japan and Kuriles.

North America: Greenland to Alaska; S. to Minn., N. Eng., N. J., Penn. and Puget Sound region.

Minn. valley: N. E. and probably N. W. districts; infrequent; peat bogs and tamarack swamps.

HERB.: *Bailey 332*, Vermilion lake; *Sandberg 371*, Chisago lake.

VACCINIUM LINN. Gen. 313 (1737).

Batodendron, Pirococcus and **Metagonia** NUTT. Trans. Am. Phil. Soc. 2, VIII. 261–262 (1843).

Cavinium THOU. Gen. Nov. Madagasc. 11 (1806).

Epigynium KLOTZSCH, Linn. XXIV, 49 (1850).
Disterigma KL. l. c. (1850).
Agapetes DUNAL, DC. Prodr. VII, 554 (1839).
Vitis-Idaea TOURN. Inst. 607 (1700).

Benth. and Hook., *Gen. Pl.* II, 573; Durand, *Ind. Gen. Phan.* 242; Engler and Prantl, *Nat. Pflanz.* 4, I, 51; Schenck, *Palaeophyt.* 719; Baillon, *Hist. Pl.* XI, 182.

Living species: 100; N. extra-tropical regions, Madagascar and the Andes mts. Russia, 10; Europe, 3; Russian Europe, 3; Canada, 16–18; E. Sts. 12; Rocky mts., 3; S. Sts., 13; California, 6; Pl. King., 4; Pl. Wheel., 1.

Fossil species: Tertiary, Alaska (*Heer*); Florissant, Colo. (*A. Br.*); Japan (*Nathorst*); Oeningen (*Heer*); Aix (*Saporta*). A large number of remains in 15–20 species. Quaternary, Madeira, Portugal.

Vaccinium corymbosum LINN. var **amoenum** (AIT.) GRAY, Man. 5, ed. 292 (1867).

V. amoenum AIT. Hort. Kew. II, 12 (1789).
? *V. corymbosum* var. *fuscatum* HOOK. Bot. Mag. 3433 (——).
? *V. marianum, grandiflorum* and *elongatum* WATS. Dendr. Brit (1825).

Wats. and Coult., Gray's Man. 6 ed. 313; Britt., Fl. N. J. 159; Mac., Fl. Can. I, 290; Chap., Fl.S. St. 260: Upham, Fl. Minn. 93; Mac., Fl. Can. I, 560; Cov., Fl. Ark. 200; Engl. Drude, Nat. Pflanz. IV, 1, 51 spec.; Gray, Syn. Fl. II, 1, 23.

North America: Newf., N. Br. and Ont. to L. Huron; S. to Minn., N. Eng., N. J. and Va.

Minn. valley: Reported from N. W. district; rare or doubtful; swamps.

HERB.: *Sandberg 376*, Tower.

Vaccinium canadense KALM. Rich. in Frankl. Narr. 2 ed. ed. 12 (1825); (*Kalm in Herb. Banks*).

V. album LAM. Enc. Meth. I, 72 (1783) *not Linn.*

Wats. and Coult., Gray's Man. 6 ed. 312; Mac., Fl. Can. I, 290, 560; Upham Fl. Minn. 93; Engl. Drude, Nat. Pflanz. IV, 1, 51; Gray, Syn. Fl. II, 1, 22.

North America: Atl. coast of Can. to Hudson Bay, Rocky mts., Columbia valley and Slave lake; S. to Minn., Ill., Penn. and N. N. Eng.

Minn. valley: N. edge; swamps; rare or doubtful.

HERB.: *Bailey 141*, Vermilion lake; *Sandberg 375*, Chisago Co.

Vaccinium pennsylvanicum LAM. Enc. Meth. I, 72 (1783).

V. myrtilloides MICHX. Fl. N. Am. I, 223 (1803).
V. ramulosum and *humile* WILLD. Enum. Suppl. 20 (1813).

V. tenellum PURSH, Fl. Am. 288 (1814).

V. multiflorum WATS. Dend. Brit. 125 (1825).

Wats. and Coult., Gray's Man. 6 ed. 312; Mac., Fl. Can. I, 290; Britt., Fl. N. J. 159; Upham, Fl. Minn. 93; Wats., King Exp. 209; Engl. Drude, Nat. Pflanz. IV, 1, 51; Gray, Syn. Fl. II, 1, 22.

North America: Newf. to Rocky mts.; S. to Minn., Ill., N. J. and Penn.

Minn. valley: N. W. district; rare; dry hills and woods.

HERB.: *Sandberg 373*, Black Oak, Goodhue Co.; *Sandberg 374*, Moose lake; *Bailey 178*, Vermilion lake; *Bailey 453*, Mud lake.

Vaccinium stamineum LINN. Spec. 498 (1753).

V. album PURSH, Fl. Am. 28 (1814).

V. elevatum DUNAL, DC. Prodr. VII, 566 (1839).

Picrococcus elevatus and *floridanus* NUTT. Trans. Am. Phil. Soc. l. c. VIII, 260 (1843).

Vaccinium kunthianum KLOTZSCH, (1850?).

Wats. and Coult., Gray's Man. 6 ed. 312; Britt., Fl. N. J. 158; Chap., Fl. S. St. 259; Mac., Fl. Can. I, 290; Upham, Fl. Minn. 93; Cov., Fl. Ark. 200; Engl. Drude, Nat. Pflanz. IV, 1, 51; Gray, Syn. Fl. II, 1, 21.

North America: St. Lawrence and Niagara rivers to Minn.; S. to N. Eng., N. J., Fla. and La.; W. to Ark.

Minn. valley: Reported from N. E. district; rare or doubtful; no Minn. specimens seen.

LXXXIV. PRIMULACEAE. Primrose Family.

Endlicher, *Gen. Pl.* 729 (1836–40); Bentham and Hooker, *Gen. Pl.* II, 628 (1876); Pax, *in Engler and Prantl, Nat. Pflanz.* IV, 1, 98 (1889); Baillon, *Hist. Pl.* XI, 305 (1892).

Genera: 27; cosmopolitan; principally in N. hemisphere.

Species: 350± living; a few doubtful fossils in Quaternary.

ANDROSACE LINN. Gen. 111 (1737).

Aretia LINN. Gen. ed. V, 178 (1754).

Benth. and Hook., *Gen. Pl.* II, 632; Durand, *Ind. Gen. Phan.* 249; Engler and Prantl, *Nat. Pflanz.* 4, I, 110 (Pax); O. Kuntze, *Rev. Gen. Pl.* II, 398 (*sub Primula*); Baillon, *Hist. Pl.* XI, 338.

Living species: 62±; temperate and Alpine regions, N. hemisphere. Russia, 15; N. America, 5; Canada, 3; Rocky mts., 4; E. Sts., 1; Pac. coast; 2; Pl. King, 2; Pl. Wheel., 1.

Androsace occidentalis PURSH, Fl. Am. 137 (1814).

Primula occidentalis OK. Rev. Gen. II, 400 (1891).

Aretia occidentalis MACM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 329; Webb., Fl. Neb. 133; Mac., Fl. Can. I, 311; Upham, Fl. Minn. 96; Coult., Fl. Colo. 234; Wats., King

Exp. 213; Cov , Fl. Ark. 201; Engl. Pax, Nat. Pflanz. 4, I, 110: Gray, Syn. Fl. II, 1, 60.

North America: Rainy river to Pembina mts. and Thompson river, Brit. Col.; lat. 49° N. to N. Mex.; E. to Minn., Ill. and Tenn.?; W. to Neb., Utah and Colo.

Minn. valley: S. C. and S. W. districts; high prairies or knolls.

HERB.: *Sandberg 389*, Red Wing.

LYSIMACHIA LINN. Gen. 121 (1737).

Lubinia VENT. Cels. 96 (1800).
Palladia MOENCH, Meth. 429 (1794).
Coxia ENDL. Gen. 733 (1840).
Naumbergia MOENCH, Suppl. 429 (1802).
Thyrsanthus SCHRANK, Denksch. Baier. Acad. 75 (1813).
Lerouxia MERAT. Fl. Par. 77 (1812).
Ephemerum REICH. Fl. Germ. Exs. 409 (1830).
Theopyxis GRISEB. Phillip. and Lechl. (1844).
Godinella LESTIB. ex Dur. Ind. Phan. 250 (1888).
Anagzanthe and **Bernardina** BANDO, ex Baill. l. c. (1892).

Benth. and Hook., *Gen. Pl.* II, 635; Durand, *Ind. Gen. Phan.* 250; Engler and Prantl, *Nat. Pflanz.* 4, I, 112 (Pax); Schenck, *Palaeophyt.* 734; Baillon, *Hist. Pl.* IX, 343.

Living species: 60±; temperate and subtropical regions of both hemispheres; very few in the S. hemisphere; centers in China. N. America, 5.

Fossil species: Interglacial, Elbe river (*Schenck*).

Lysimachia thyrsiflora LINN. Fl. Dan. 517 (1757).

L. capitata PURSH, Fl. Am. 135 (1814).
Naumburgia thyrsiflora REICH. DC. Prodr. VIII, 60 (1844).

Wats. and Coult., Gray's Man. 6 ed. 331; Britt., Fl. N. J. 165; Upham, Fl. Minn. 97; Mac., Fl. Can. I, 314; Gray, Syn. Fl. II, 1, 63; Webb., Appx. Neb. 36.

Europe; Japan.

North America: N. S., N. Br. to Mackenzie and Pac. to Alaska; S. Oregon, Minn., Iowa, Neb., S. Ill., Penn. and N. J.

Minn. valley: Throughout; swamps, bogs and wet meadows.

HERB.: *Sheldon 344*, marshes south of Lake Madison; *Taylor 443*, Lake Helena, Waseca Co.; *Ballard 561*, Prior's lake, Scott Co,; *Taylor 48*, Elysian; *Holzinger 140*, Winona Co.; *Herrick 189*, Minneapolis; *Bailey 421*, Long lake; *Sandberg 391*, Chisago Co.; *Herrick 190*, Minneapolis; *Oestlund 111*, Ramsey Co.; *Herb. Moyer 159*, Montevideo.

Lysimachia terrestris (LINN.) B. S. P Cat. N. Y. (1888).

Viscum terrestris LINN. Spec. 1023 (1753).
Lysimachia vulgaris WALT. Fl. Car. 92 (1788).
L. stricta AIT. Hort. Kew. I, 199 (1789).
L. racemosa MICHX. Fl. N. Am. I, 128 (1803).

Wats. and Coult., Gray's Man. 6 ed. 331; Upham, Fl. Minn. 97; Britt., Fl. N. J. 165; Mac., Fl. Can. I, 314; Chap., Fl. S. St. 280; Gray, Syn. Fl, II, 1, 63.

North America: Newf., Anticosti, N. S., N. Br. to Thunder bay and Saskatchewan; S. to N. J. and N. Ga.; W. to Minn. and Ark.

Minn. valley: N. E. and N. W. districts; low meadows; rare.

HERB.: *Holzinger 141*, Winona Co.; *Bailey 11*, Vermilion lake; *Ankeny 4*, Stillwater; *Roberts 90*, Little Marais; *Bailey 463*, Agate bay; *Roberts 91*, Grand Marais; *Sandberg 392* Red Wing.

STEIRONEMA RAF. Ann Phys. Brux. VII, 192 (1820).

Durand, *Ind. Gen. Phan.* 250; Engler and Prantl, *Nat. Pflanz.* 4, I, 113 (Pax); Baillon, *Hist. Pl.* XI, 343.

Living species: 4; N. America; 1 introduced in Europe; Pl. Wheel., 2; Pl. King, 1.

Steironema quadriflorum (SIMS) HITCHCOCK, Fl. Ames. 506 (1891).

Lysimachia quadriflora SIMS, Bot. Mag. 660 (1803).
L. longifolia PURSH, Fl. Am. 135 (1814).
L. revoluta NUTT. Gen. I, 122 (1818).
Steironema longifolia RAF. Ann. Brux. VII, 192 (1820).
Lysimachia angustifolia GRAY, Man. ed. 1, (1848).

Wats. and Coult., Gray's Man. 6 ed. 330; Chap., Fl. S. St. 281; Upham, Fl. Minn. 97; Mac., Fl. Can. I, 314; Gray, Syn. Fl. II, 1, 62.

North America: Niagara river to S. Man.; S. to N. Y. and W. Va.; W. to Minn. and Iowa.

Minn. valley: Throughout; moist places, especially around prairie sloughs.

HERB.: *Kassube 158*, Minneapolis; *Sheldon 1328*, Lake Benton; *Herrick 194*, Minneapolis; *Herrick 195*, Minneapolis; *Oestlund 112*, Hennepin Co.; *Sandberg 395*, Cannon Falls; *Oestlund 113*, Minneapolis; *Sheldon 1628*, Taylor's Falls; *Herb. Sheld. 1736*, Minneapolis.

Steironema lanceolatum (WALT.) GRAY, var. **hybridum** (MICHX.) GRAY, Proc. Am. Acad. XII, 62 (1876).

Lysimachia hybrida MICHX. Fl. N. Am. I, 126 (1803).

Wats. and Coult., Gray's Man. 6 ed. 330; Upham, Fl. Minn. 97; Britt., Fl. N. J. 165; Webb., Fl. Neb. (*spec.*) 133; Mac., Fl. Can. I, 313; Coult., Fl.

Colo. 235; Roth., Wheel. Exp. (*spec.*) 185; Cov., Fl. Ark. 201; Gray, Syn. Fl. II, 1, 61.

North America: Ont. to Minn. and Dak.; S. to N. Y., N. J. and Fla.; W. to Neb., Ark., La. and Tex.

Minn. valley: Reported from E. district; infrequent; wet meadows or edges of marshes.

HERB.: *Sandberg 394*, Red Wing.

Steironema ciliatum (LINN.) RAF. Ann. Gen. Phys. Brux VII, 192 (1820).

Lysimachia ciliata LINN. Mant. (1767).
L. quadrifolia var. —— LINN. Mant. (1767).

Wats. and Coult., Gray's Man. 6 ed. 330; Upham, Fl. Minn. 97; Britt., Fl. N. J. 165; Chap., Fl S. St. 280; Mac., Fl. Can. I, 313; Webb., Fl. Neb. 133; Coult., Fl. Colo. 235; Wats., King Exp. 213; Roth., Wheel. Exp. 185; Cov., Fl. Ark. 201; Engl. Pax, Nat. Pflanz. IV, 1, 113; Gray, Syn. Fl. II, 1, 61; Coult., Fl. Tex. 255.

Northern and W. Europe—naturalised.

North America: N. S. and N. Br. to Pac.; S. in Rockies to N. Mex.; E. to Minn., Neb., Mo., Ark., N. Eng., N. J. and Fla.

Minn. Valley: Throughout; low places and edges of swamps or marshes.

HERB.: *Ballard 569*, Prior's lake, Scott Co.; *Taylor 848*, Glenwood; *Sheldon 726*, Sleepy Eye; *Kassube 157*, Minneapolis; *Arthur 71*, Vermilion lake; *Sandberg 393*, Red Wing; *Herrick 191*, St. Louis river; *Herrick 192*, Minneapolis; *Holzinger 142*, Winona Co.; *Herrick 193*, Minneapolis; *Roberts 92*, Duluth; *Herb. Sheld. 1737*; *Herb. Moyer 160, 161*, Montevideo.

TRIENTALIS LINN. Gen. 309 (1737).

Benth. and Hook., *Gen. Pl.* II, 636; Durand, *Ind. Gen. Phan.* 250; Engler and Prantl, *Nat. Pflanz.* 4, I, 113 (Pax); Baillon, *Hist. Pl.* XI, 344.

Living species: 2; 1 in N. Europe, Siberia and N. W. America; 1 in Atlantic and Northern America.

Trientalis americana (PERS.) PURSH, Bart. Fl. Am. Sept. II, 47 (1822).

T. europaea MICHX. Fl. N. Am. I (1803)
T. europaea var. *americana* PERS. Syn. I (1805).
T. europaea var. *angustifolia* TORR. Fl. N. Y. I 363 (1843).

Wats. and Coult., Gray's Man. 6 ed. 329; Britt., Fl. N. J. 165; Upham, Fl. Minn. 97; Mac., Fl. Can. I, 313; Engl. Pax, Nat. Pflanz. IV, I, 113; Gray, Syn. Fl. II, 1, 61.

North America: Newf., Labrador, Anticosti and N. S. to Man. and Saskatchewan; S. to N. J., Va., Ind. and Minn.

Minn. valley: Forest district to Blue Earth Co.; damp woods and peat bogs.

HERB.: *Sheldon 229,* Lake Washington, Blue Earth Co.; *Roberts 58,* Grand Marais; *Roberts 89,* Duluth; *Bailey 244,* Vermilion lake; *Sandberg 390,* Chisago Co.

CENTUNCULUS LINN. Gen. 76 (1737).

Micropyxis DUBY, Mem. Prim. 39 (1844).

Benth. and Hook., *Gen. Pl.* II, 637; Durand, *Ind. Gen. Phan.* 250; Engler and Prantl, *Nat. Pflanz.* 4, I, 115; Baillon, *Hist. Pl.* XI, 345.

Living species; 3; temperate and warmer regions. N. America, 2; S. Sts., 2; Canada, 1.

Centunculus minimus LINN. Spec. (1753).

C. lanceolatus MICHX. Fl. I, 93 (1803).

Wats. and Coult., Gray's Man. 6 ed. 332; Mac., Fl. Can. I, 315; Chap., Fl. S. St. 281; Coult., Fl. Colo. 232; Brew. and Wats., Fl. Calif. I, 469; Upham, Fl. Minn. 97; Nym., Fl. Eur.; Led., Fl. Ross. III, 30; Hook., Fl. Gt. Brit 265; Herd., Fl. Eur. Russ. 86; Cov., Fl. Ark. 201; Engl. Pax, Nat. Pflanz. IV, 1, 115; Gray, Syn. Fl II, 1, 64; Hart., Fl. Scand. I, 127; Webb., Appx. Neb. 36; Coult., Fl. Tex. 256.

Europe and N. Asia; Belgium to Montenegro and Baikal Sib.; Australia; Brazil; Andes mts. to Chile in S. Amer.

North America. Minn., Neb. and Dak. to Saskatchewan and Oregon; S. to Minn., Ill., Ark., Tex. and E. to N. Car. and Fla.

Minn. valley: Reported from S. W. edge; probably sparingly S. and W. and N. W.; low places and around bases of rock-ledges.

LXXXV. OLEACEAE. Ash Family.

Endlicher, *Gen. Pl.* 571; Endlicher, *Gen. Pl.* 570 (1836-40)—*Jasmineae*; Bentham and Hooker, *Gen. Pl.* II, 672 (1876); Baillon, *Hist. Pl.* XI, 230 (1892).

Genera: 18; temperate and warmer regions; absent in boreal regions.

Species: 300±; 30± fossil in Tertiary.

FRAXINUS LINN. Gen. 773 (1737).

Ornus PERS. Syn. I, 9 (1805).

Benth. and Hook., *Gen. Pl.* II, 676; Durand, *Ind. Gen. Phan.* 259; Schenck, *Palaeophyt.* 760; Baillon, *Hist. Pl.* XI, 251; Engl. Knoblauch, *Nat. Pflanz.* IV, 2, 5.

Living species: 39±; temperate and subtropical regions. N. America, 12; Europe, 6; Russia, 3; Russian Europe, 2; Canada, 6; E. Sts., 6; S. Sts., 5; Pl. Wheel., 4; California, 2; W. Tex., 6; Rocky mts., 2; Pl. King, 2; especially N. America, E. Asia and Mediterranean region (*Knoblauch*).

Fossil species: Lower Oligocene and Miocene, Europe (*Saporta, Heer*); Greenland (*Heer*); Pac. N. America (*Lesquer-*

eaux); Pliocene, France (*Saporta, Unger*). Several (10–15) sp. described.

Fraxinus sambucifolia LAM. Enc. Meth. II, 549 (1786).

F. nigra MARSH. Arbust. Amer. 51 (1785).

Wats. and Coult., Gray's Man. 6 ed. 336; Upham, Fl. Minn. 115; Mac., Fl. Can. I, 317; Britt., Fl. N. J. 167; Cov., Fl. Ark. 202; Gray, Syn. Fl. II, 1, 76.

North America: Anticosti to L. Superior reg., Man. and Saskatchewan; S. to Minn., Mo. and Ark.; E. to N. Eng., N. J., Va. and Ky.

Minn. valley: Reported from N. and N. W. districts; rich woods and banks or shores.

HERB.: *Bailey 346*, St. Louis river.

Fraxinus pubescens LAM. Enc. Meth. II, 548 (1786).

F. nigra DU ROI, Diss. (1771).
F. pennsylvanica MARSH. Arbust. Amer. 51 (1785).
F. tomentosa MICHX. f. Sylva, 119 (1810).
F. oblongocarpa BUCKL. Proc. Acad. Phil. (1862).

Wats. and Coult., Gray's Man. 6 ed. 336; Britt., Fl. N. J. 167; Coult., Fl. Colo. 236; Mac., Fl. Can. I, 316; Upham, Fl. Minn. 115; Webb., Fl. Neb. 140; Chap., Fl. S. St. 370; Gray, Syn. Fl. II, 1, 75; Engl. Knobl., Nat. Pflanz. IV, 2, 7; Coult., Fl. Tex. 259.

North America: N. S., Q., Ont. to Man. and Saskatchewan, and 53° N. lat.; S. to Minn., Dak., Neb., Ill., Ohio and E. U. S. to Fla. Tex.?

Minn. valley: N. E. district; local or rare; rich woods and banks of lakes or streams.

HERB.: *Bailey 56* and *58*, Vermilion lake.

Fraxinus viridis MICHX. f. Sylv. 120 (1810).

F. juglandifolia WILLD. Spec. IV, 1104 (1805).
F. concolor MUHL. Cat. (1813).
F. caroliniana PURSH, Fl. Am. I, 9 (1814).

Wats. and Coult., Gray's Man. 6 ed. 336; Britt., Fl. N. J. 167; Upham, Fl. Minn., 115; Webb., Fl. Neb. 140; Chap., Fl. S. St. 370; Mac., Fl. Can. I, 316; Coult., Fl. Colo. 236; Roth., Wheel. Exp. 185; Wats., King Exp. 284; Cov., Fl. Ark. 202; Gray, Syn. Fl. II, 1, 75; Coult., Fl. Tex. 259.

North America: Owen Sound to Man. and Assiniboia; S. to Dak., Neb., Ark., Tex., and E. to N. Eng., N. J. and Fla.

Minn. valley: Throughout to Pommes des Terres and Cottonwood valleys; rich woods and shores or banks.

HERB.: *Taylor 14*, Elysian; ?*Taylor 663*, Cobb river, Blue Earth Co.; *Menzel 6*, Pipestone.

Fraxinus americana LINN. Spec. 2 ed. 1510 (1762).

F. alba MARSH. Arbust. Amer. 51 (1785).
F. acuminata LAM. Enc. Meth. II, 542 (1786).

F. canadensis GAERTN. Fruct. I, 122 (1788).
F. epiptera MICHX. Fl. N. Am. II, 256 (1803).
F. discolor MUHL. Cat. 111 (1813).

Wats. and Coult., Gray's Man. 6 ed. 335; Mac., Fl. Can. I, 316; Upham, Fl. Minn. 115; Webb., Fl. Neb. 140; Chap., Fl. S. St. 369; Britt., Fl. N. J. 167; Cov., Fl. Ark. 202; Gray, Syn. Fl. II, 1, 74; Engl. Knobl., Nat. Pflanz. IV, 2, 7; Coult., Fl. Tex. 259 *in var.*

North America: N. S., N. Br. to Owen Sound and Minn.; S. to Neb., Kan. and Ark.; E. to N. Eng., N. J., Fla. and La. Var. in Tex.

Minn. valley: Throughout; rich woods and banks of lakes and streams.

HERB.: *Taylor 484,* Janesville; *Taylor 704,* Minnesota lake; *Taylor 816,* Glenwood; *Taylor 526,* Mud lake, Waseca Co.; *Ballard 550,* Spring lake, Scott Co.; *Sheldon 855,* Sleepy Eye; *Taylor 1020,* Glenwood; *Bailey 117,* Vermilion lake; *Oestlund 152,* Hennepin Co.; *Holzinger 192,* Winona Co.; *Herb. Sheld. 1907,* Minneapolis.

LXXXVI. GENTIANACEAE. Gentian Family.

Endlicher, *Gen. Pl.* 599 (1836–40); Bentham and Hooker, *Gen. Plant.* II, 799 (1876); Baillon, *Hist. Pl.* X, 113 (1891).

Genera: 45; temperate regions; a few in tropics and boreal regions.

Species: 550–600; widely distributed; a few fossil forms from Tertiary rocks.

MENYANTHES LINN. Gen. 117 (1737) em. BENTH. l. c. (1876).

Menonanthes HALL. Fl. Helv. 633 (1742).

Baillon, *Hist. Pl.* X, 144; Benth. and Hook., *Gen. Pl.* II, 819; Durand, *Ind. Gen. Phan.* 278; Schenck, *Palaeophyt.* 763.

Living species: 2; Europe; Asia — mts. and N.; N. America. 1, Europe, Asia, N. America; 1, W. N. Amer. and Russia. N. Amer., 2.

Fossil species: 2; Tertiary, Greenland, Lausanne, etc. (*Heer*); doubtful.

Menyanthes trifoliata LINN. Spec. 207 (1753).

Wats. and Coult., Gray's Man. 6 ed. 353; Mac., Fl. Can. I, 327; Britt., Fl. N. J. 173; Upham, Fl. Minn. 113; Brew. and Wats., Fl. Calif. I, 485· Nym., Fl. Eur.; Led., Fl. Ross. III, 76; Hook., Fl. Gt. Brit. 273; Miyabe, Fl. Kur. 251; Herd., Fl. Eur. Russ. 88; Wats., King. Exp. 281; Gray, Syn. Fl. II, 1, 128; Hart., Fl. Scand. I, 102; Webb., Appx. Neb. 40.

Iceland and N. Russia to Spain and Servia; Siberia to N. W. India, Japan and Kurile Isls.

North America: Greenland and Labrador to Mackenzie and Alaska; S. to N. S., N. Br., N. Y., N. J. and Penn.; W. to Minn., Dak., Iowa and Neb.; S. in mts. to San Francisco and Nevada.

Minn. valley: Forest district and probably to Chippewa river valley; tamarack swamps and wet woods.

HERB.: *Ballard 357*, Helena, Scott Co.; *Ballard 659*, Waconia; *Taylor 210*, Janesville; *Sheldon 122*, Madison Lake; *Taylor 177*, Janesville; *Bailey 282*, St. Louis river; *Kassube 201*, Minneapolis; *Sandberg 464*, Chisago lake; *Sandberg 465*, Red Wing; *Herb. Sheld. 1776*, Ramsey Co.

NYMPHODES LUDW. Defin. 23 (1737).

Limnanthemum GMEL Nov. Act. Petrop. XIV, 527 (1769).
Waldschmidtia WIGG. Prim. Holst. 19 (1780).
Villarsia GMEL. Act. Petrop. XV (1791) *not Vent.*
Schweyckerta C. C. GMEL. Fl. Bad. I, 447 (1805).

Baillon, *Hist. Pl.* X, 144; Benth. and Hook., *Gen. Pl.* II, 819; Durand, *Ind. Gen. Phan.* 278; O. Kuntze, *Rev. Gen.* II, 429.

Living species: 26 described; 12 reduced; temperate and tropical regions. N. America, 2; S. Sts., 2; 1 other regions except W. of Rocky mts. W. Tex., I.

Nymphodes lacunosum (VENT.) OK. Rev. Gen. II, 429 (1891).

Villarsia lacunosa (VENT.) Choix. 9 (1803).
? *Limnanthemum lacunosum* MICHX. Fl. N. Am. I (1803)
Villarsia cordata ELL. Sk. I, 230 (1821).

Wats. and Coult., Gray's Man. 6 ed. 353; Britt., Fl. N. J. 174; Upham, Fl. Minn. 113; Mac., Fl. Can. I, 327; Chap., Fl. S. St. 358; Cov., Fl. Ark. 204; Gray, Syn. Fl. II, 1, 128.

North America: N. S., N. Br., Ont. to Minn.; S. to N. Eng., N. J., Fla.; W. to Ark., La. and Miss.

Minn. valley: Reported from N. edge; rare; floating in quiet streams or lakes.

GENTIANA LINN. Gen. 197 (1737).

Pneumonanthe and **Hippion** SCHMIDT, Roem. Arch. I, 8 (1796).

Ciminalis ADANS. FAM. II, 504 (1763).

Asterias, Coelantha, Dasystephana, **Ericoila**, **Eurythalia** and **Gentianella** BORKH. Roem. Arch. I, 23 (1796).

Ericala DON, Trans. Linn. Soc. XVII, 511 (1837).

Glyphospermum, Selatium, Ulostoma and **Eudoxia** G. DON, Gen. Syst. IV, 195, 196 (1838).

Varasia PHILLIPPI, Fl. Atacam. 35, t. 5 (1860).

Baillon, *Hist. Pl.* X, 140; Benth. and HOOK., *Gen. Pl.* II, 815; Durand, *Ind. Gen. Phan.* 278.

Living species: 180; cosmopolitan; in tropical mts. Europe, 35; Russia, 45; Russian Europe, 16; North America, 38; Rocky mts., 14; S. Sts., 7; E. Sts., 12; Canada, 27; California and Oregon, 10–12; Pl. King., 6; Pl. Wheel., 10.

Gentiana linearis FROEL. var. **rubricaulis** (SCHWEIN.).

Gentiana rubricaulis SCHWEIN. Keat. Narr. Appx. 110 (1825).
G. saponaria var. *linearis* GRAY, Man. ed. V. 389 (1867) *part.*
G. linearis var. *lanceolata* GRAY, Syn. Fl. II, 1, 123 (1886).
G. pneumonanthe AUCT. AMER.

Wats. and Coult., Gray's Man. 6 ed. 351; Britt., Fl. N. J. 183; Mac., Fl. Kan. I. 325, 566; Upham, Fl. Minn. 113.

North America: N. Br., Q., Ont., L. Huron reg., L. Superior reg. and Minn.; S. to N. Eng., N. J., N. Y. and mts. of Md.; W. to Ill. and Wisc.

Minn. valley: Reported from S. Central district; wet prairies.

Gentiana flavida GRAY, Am. Jour. Sci. N. Ser. I, 80 (1846).

G. alba AUCT. *not* MUHL.

Wats. and Coult., Gray's Man. 6 ed. 351; Upham, Fl. Minn. 112; Mac., Fl. Can. I, 324; Gray, Syn. Fl. II, 1, 123; Webb., Appx. Neb. 40.

North America: Ont., N. Y. and Penn. to Va.; W. to Minn., Ill., Neb. and Ky.

Minn. valley: Forest district to New Ulm; rare or local; wet meadows.

HERB.: *Sandberg 462,* Red Wing; *Holtz 5,* Cedar lake.

Gentiana andrewsii GRISEB. Gent. 287 (1839).

Gentiana andrewsii var. *linearis* HOOK. Fl. Bor.-Am. II, 55 (1840).

Wats. and Coult., Gray's Man. 6 ed. 351; Britt., Fl. N. J. 172; Mac., Fl. Can. I, 324, 566; Upham, Fl. Minn. 113; Chap., Fl. S. St. 356; Cov., Fl. Ark. 204; Gray, Syn. Fl. II, 1, 123.

North America: Q., Ont. to Thunder bay; S. to N. Eng., N. J. and N. Ga.; W. to Minn. and Ark.

Minn. valley: Throughout; wet meadows and banks of lakes and streams.

HERB.: *Sheldon 1457,* Pipestone; *Sheldon 1300,* Lake Benton; *Oestlund 148,* Minneapolis; *Kassube* 200, Minneapolis; *Bailey 355,* Mud River; *Sandberg 463,* Cannon Falls; *Herb. Sheld. 1873,* Ramsey Co.; *Herb. Wickersheim 106, 107,* Idlewild, Lincoln Co.; *Herb. Moyer 198,* Montevideo.

Gentiana saponaria LINN. Spec. 228 (1753).

G. catesbaei WALT. Fl. Car. 109 (1788).
G. elliottii var. (?) *latifolia* CHAPM. Fl. S. St. 356 (1860).

Wats. and Coult., Gray's Man. 6 ed. 350; Britt., Fl. N. J. 172; Upham, Fl. Minn. 113; Chap., Fl. S. St. 356; Mac., Fl. Can. I, 324; Cov., Fl. Ark. 204; Gray, Syn. Fl. II, 1, 122.

North America: Q., Ont. and N. Y. to N. J. and Fla.; W. to Minn., Ark. and La.

Minn. valley: E edge; moist woodland and river banks or lake shores.

HERB.: *Holzinger 186,* Fillmore Co.

Gentiana puberula MICHX. Fl. N. Am. I, 176 (1803).

G. saponaria var. *puberula* GRAY, Man. ed. 1, 360 (1848).

Wats. and Coult., Gray's Man. 6 ed. 350; Upham, Fl. Minn. 113; Mac., Fl. Can. I, 324, 566; Webb., Fl. Neb. 140; Cov., Fl. Ark. 204; Gray, Syn. Fl. II, 1, 122.

North America: Red river valley to W. N. Y.; S. to Ohio, Ky., Kan. and Ark.; W. to Minn. and Neb.

Minn. valley: Throughout; dry prairies and barren places.

HERB.: *Taylor 1178,* Glenwood; *Manning 6,* Lake City; *Herb. Wickersheim 108,* Idlewild, Lincoln Co.; *Herb. Moyer 199,* Montevideo.

Gentiana quinquefolia LINN. var. **occidentalis** (GRAY) HITCHCOCK, Fl. Ames. 508 (1891).

spec. G. quinqueflora LAM. Enc. Meth. II, 643 (1786).

G. amarelloides PURSH, Fl. Am. 186 (1814).

var. G. quinqueflora HOOK. Bot. Mag. 3496 (——) *chiefly.*

G. quinqueflora var. *occidentalis* GRAY, Man. 1 ed. 359 (1848).

Wats. and Coult., Gray's Man. 6 ed. 350; Upham, Fl. Minn. 112; Britt., Fl. N. J. 172 spec.; Chap., Fl. S. St. 355; Mac., Fl. Can. I, 566; Gray, Syn. Fl. II, 1, 119.

North America: Ont. to Va. and Ohio; W. to Minn.; S. to Tenn., Fla. and La.

Minn. valley: Reported from E. district; probably throughout forest district; knolls in woods.

HERB.: *Sandberg 460,* Red Wing.

Gentiana serrata GUNN. Fl. Norv. 10 (1766).

G. detonsa ROTTB. Hort. Hafn. X, 254 (1773).

G. barbata FROEL. Gent. 114 (1796).

G. brachypetala BUNGE, Consp. Gent. 225 (1829).

Wats. and Coult., Gray's Man. 6 ed. 349; Upham, Fl. Minn. 112; Mac., Fl. Can. I, 321; Brew. and Wats., Fl. Calif. I, 481; Coult., Fl. Colo. 243; Forbes and Hems., Fl. Sin. II, 127; Herd., Fl. Eur. Russ. 88; Roth., Wheel. Exp. 193; Gray, Syn. Fl. II, 1, 117; Hart, Fl. Scand. I, 99.

Scandinavia to N. India, Manchuria and China.

North America: Newf. and Anticosti to Saskatchewan, Rocky mts., N. W. T., Point Barrow, Alaska and Arctic ocean; S. in Sierras to Mariposa Co., Calif.; S. in Rockies to Colo. and Nev.; S. to Minn., Dak., Iowa and E. to N. Y.

Minn. valley: Forest district and N. W. district; wet meadows.

HERB.: *Taylor 1013,* Glenwood; *Oestlund 147,* Minneapolis; *Leiberg 53,* Blue Earth Co.; *Herb. Sheld. 1874,* Minneapolis.

Gentiana americana (LINN.).

G. ciliata americana LINN. Syst. I, 645 (1756).
G. crinita FROEL. Gent. 112 (1796).
G. fimbriata ANDR. Bot. Rep. 509 (1797-1804).
Gentianella crinita DON, Syst. IV, 179 (1838).

Wats. and Coult., Gray's Man 6 ed. 349; Britt. Fl. N. J. 172; Mac., Fl. Can. I, 321; Chap., Fl. S. St. 355; Upham, Fl. Minn. 112; Wats., King Exp. 278; Roth., Wheel. Exp. 193; Gray, Syn. Fl. II, 1, 117.

North America. Q., Ont. to Saskatchewan and 52° N. lat.; S. to N. Eng., N. J. and mts. of Ga.; W. to Gt. lakes, Minn., Dak. and Colo.

Minn valley: Throughout forest district; swampy places and wet meadows.

HERB.: *Holzinger 185,* Winona Co.; *Sandberg 461,* Cannon Falls; *Hammond 33,* Minneapolis.

LXXXVII. APOCYNACEAE. Dogbane Family.

Endlicher, *Gen. Pl.* 577 (1836–40); Bentham and Hooker, *Gen. Plant.* II, 681 (1876); Baillon, *Hist. Pl.* X, 146 (1891).

Genera: 127 (Baillon); 103 (B. and H.); tropical regions; a few in temperate zones of N. and S. hemispheres.

Species: 1000±; very few in S. hemisphere; a few fossil from Tertiary, *Apocynophyllum ?*

APOCYNUM LINN. Gen. 187 (1737).

Baillon, *Hist. Pl.* X, 207; Benth. and Hook., *Gen. Pl.* II, 716; Durand, *Ind. Gen. Phan.* 264; Schenck, *Palaeophyt.* 767.

Living species: 5; S. Europe; temperate Asia; N America. Russia, 2; Europe, 1; N. America, 2; Pl. Wheel., 2, Canada, 2; W. Tex., 1–2.

Fossil species: *Apocynophyllum*; Tertiary, Portugal, Japan, Australia, East Indies (*Heer, Ettinghausen*), a few species; all rather doubtful.

Apocynum cannabinum LINN. Spec. 213 (1753).

A. sibiricum JACQ. Hort. Vindob. III, 66 (1776).
A. hypericifolium AIT. Hort. Kew. I, 304 (1789).
A. pubescens R. BR. Wern. Soc. I, 67 (1808).

Wats. and Coult., Gray's Man. 6 ed. 338; Britt., Fl. N. J. 168; Webb., Fl. Neb. 140; Chap., Fl. S. St. 358; Upham, Fl. Minn. 114; Mac., Fl. Can. I, 318, 565; Coult., Fl. Colo. 237; Brew. and Wats., Fl. Calif. I, 473; Wats.

King Exp. 282; Roth., Wheel. Exp. 186; Cov., Fl. Ark. 203; Gray, Syn. Fl. II, 1, 83; Coult., Fl. Tex. 262.

North America: Same range as *A. androsaemifolium;* extends also into S. Calif. and E. to Fla.

Minn. valley: Throughout; rich woods, thickets, river banks and shores; edges of marshes.

HERB.: *Taylor 337,* Janesville; *Ballard 93,* Shakopee; *Taylor 583,* Minnesota Lake; *Taylor 1025,* Glenwood; *Sheldon 1532,* Lake Benton; *Ballard 507,* Prior's lake, Scott Co.; *Taylor 752,* Glenwood; *Sheldon 975,* Sleepy Eye; *Sheldon 388,* Madison Lake; *Sheldon 332,* Smith's Mills, Blue Earth Co.; *Herrick 249,* Minneapolis; *Kassube 203,* Minneapolis; *Bailey 214,* Vermilion lake; *Sandberg 467,* Cannon Falls; *Oestlund 150,* Hennepin Co.; *Herrick 250,* Minnetonka; *Herb. Moyer 201,* Chippewa river, near Montevideo.

Apocynum androsaemifolium LINN. Spec. 213 (1753).

A. androsaemifolium and var. *incanum* A. DC. Prodr. VIII, 412 (1844).

Wats. and Coult., Gray's Man. 6 ed. 338; Britt., Fl. N. J. 168; Upham, Fl. Minn. 113; Webb., Fl. Neb. 140; Mac., Fl. Can. I, 317, 565; Coult., Fl. Colo. 237; Chap., Fl. S. St. 359; Brew. and Wats., Fl. Calif. I, 473; Roth., Wheel. Exp. 186; Wats., King Exp. 282; Cov., Fl. Ark. 203; Gray, Syn. Fl. II, 1, 82; Coult., Fl. Tex. 263.

North America: Anticosti and Atl. coast to Pac. and Brit. Col.; S. to N. Eng., N. J. and N. Car.; W. to Sierras and N. Mexico.

Minn. valley: Throughout; rich woods and thickets; banks and shores.

HERB.: *Ballard 738,* Waconia; *Taylor 989,* Glenwood; *Sheldon 425,* Madison Lake; *Ballard 852,* Patterson lake, Carver Co.; *Ballard 91,* Chaska; *Taylor 328,* Janesville; *Herrick 248,* St. Louis river; *Oestlund 149,* Ramsey Co.; *Kassube 202,* Minneapolis; *Bailey 183,* Vermilion lake; *Bailey 131,* Vermilion lake; *Sandberg 466,* Goodhue Co.; *Herb. Sheld. 1692,* Minneapolis; *1731,* Ramsey Co.; *Herb. Moyer 200,* Montevideo.

LXXXVIII. ASCLEPIADACEAE. Milkweed Family.

Endlicher, *Gen. Pl.* 588 (1836-40); Bentham and Hooker, *Gen. Plant* II, 728 (1876); Baillon, *Hist. Pl.* X, 221 (1891).

Genera: 190 (Baillon); 146 (B. and H.); tropical regions; a few in temperate zones, especially in N. hemisphere and S. Africa; in the latter region the development is especially abundant.

Species: 1500 ±; 1-2 fossil in recent rocks.

ASCLEPIAS LINN. Gen. 185 (1737).

Otaria HBK. Nov. Gen. et Spec. III, 192 (1818).

Gomphocarpus, Xysmalobium, Kanahia R. BR. Mem. Wern. Soc. I, 37, 38, 39 (1808).

Krebsia, Mackenia HARV. Gen. S. Afr. Pl. ed. 2, 233 (1868).

Pachycarpus, Parapodium, Schizoglossum, Aspidoglossum, Logarinthus E. MEY. Comm. Pl. Austr. Afr. 200–221 (1837).

Rhinolobium ARN. Mag. Zoöl. and Bot. II, 420 (1838).

Canahia SPRENG. Syst. I, 526 (1825).

Asclepiodora GRAY, Proc. Am. Acad. XII, 66 (1877).

Anantherix and **Stylandra** NUTT. Gen. I, 169, 170 (1818).

Polyotus NUTT. Trans. Am. Phil. Soc. V, 199 (1839).

Podostigma and **Acerates** ELL. Sk. I, 316, 326 (1821).

Schizonotus A. GRAY, Syn. Fl. II, 1, 100 (1886).

Funastrum FOURN. Ann. Sci. Nat. 6, XIV, 388 (1882).

Baillon, *Hist. Pl.* X, 245; Benth. and Hook., *Gen. Pl.* I, 752–755; Durand, *Ind. Gen. Phan.* 268; Schenck, *Palaeophyt.* 770.

Living species: 180; cosmopolitan except in polar and sub-polar regions. N. America, 55; S. and E. E. Sts., 28; S. Sts., 30; W. Tex., 21.

Fossil species: Tertiary, Japan (*Unger*); Portugal, Greenland, Rhone, Oenigen (*Heer*); 5 sp. described.

Asclepias lanuginosa NUTT. Gen. I, 168 (1818).

A. nuttalliana TORR. Ann. Lyc. N. Y. II, 218 (1834).

Acerates lanuginosa DECN. DC. Prodr. VIII (1844).

A. monocephala LAPHAM, Gray's Man. ed. 2, appx. (1852).

Wats. and Coult., Gray's Man. 6 ed. 343; Webb., Fl. Neb. 141; Upham, Fl. Minn. 115; Coult., Fl. Colo. 242.

North America: Mont. to Wisc. and N. Ill.; S. to Neb. and Colo.

Minn. valley: Blue Earth Co. W. to Dakota line; S. Central, S. W. and N. W. districts; prairies and hillsides.

HERB.: *Gedge 12*; Riverton, Clay Co.; *Holzinger 191*, Winona; *Herb. Moyer 210*, Montevideo.

Asclepias viridiflora RAF. Med. Repos. XI, 360 (1808).

Acerates viridiflora ELL. Sk. I, 317 (1821).

Polyotus heterophyllus NUTT. Trans. Am. Phil. Soc. V, 522 (1840).

Wats. and Coult., Gray's Man. 6 ed. 343; Britt., Fl. N. J. 169; Mac., Fl. Can. I, 320; Upham, Fl. Minn. 115; Webb, Fl. Neb. 141; Coult., Fl. Colo. 242; Cov., Fl. Ark. 203; Chap., Fl. S. St. 365; Gray, Syn. Fl. II, 1, 99; Coult., Fl. Tex. 268.

North America: Niagara river to Rocky mts.; S. to N. J. and Fla.; W. to Dak., Neb., Colo., Ark. and Tex.

Minn. valley: Throughout; dry places and banks of streams.

HERB.: Type,—*Sheldon 1105*, Springfield; *Sheldon 1387*, Lake Benton; *Ballard 383*, Jordan, Scott Co.; *Sheldon*

732, Sleepy Eye; *Gedge 11*, Detroit; var. *linearis* (Gray)—*Sandberg 474*, Red Wing; *Holzinger 190–191*, Winona;—var. *lanceolata* (Ives); *Ballard 272*, Jordan, Scott Co.; *Taylor 690*, Minnesota lake; *Sheldon 610*, Wilton, Waseca Co.; *Leiberg 55*, Blue Earth Co.; *Herb. Moyer 209*, Watson [var. *lanceolata* (Ives).].

Asclepias floridana LAM. Enc. Meth. I, 284 (1783).

A. longifolia MICHX. Fl. N. Am. I, 116 (1803).
Acerates longifolia ELL. Sk. I, 317 (1821).
A. floridana HITCHCOCK, Fl. Ames 508 (1891).

Wats. and Coult., Gray's Man. 6 ed. 343; Webb., Fl. Neb. 141; Chap., Fl. S. St. 366; Mac., Fl. Can. I, 565; Cov., Fl. Ark. 203; Gray, Syn. Fl. II, 1, 99, Coult., Fl. Tex. 268.

North America: Ont. to Minn., Dak. and Neb.; S. to Ohio, Fla., Ark. and Tex.

Minn. valley: S. and N. W. districts; wet meadows or fields.

HERB.: *Juni 13*, Alexandria; *?Gedge 13*, Clay Co.

Asclepias verticillata LINN. Spec. ed. 2, 1272 (1762).

A. galioides HBK. Nov. Gen. et Spec. III, 188 (1818).

Wats. and Coult., Gray's Man. 6 ed. 342; Britt., Fl. N. J. 170; Upham, Fl. Minn. 115; Mac., Fl. Can. I, 319; Chap., Fl. S. St. 365; Coult., Fl. Colo. 241; Roth., Wheel. Exp. 368; Wats., King Exp. 282; Cov., Fl. Ark. 203; Gray, Syn. Fl. II, 1, 97; Coult., Fl. Tex. 267.

North America: Ont. to Saskatchewan and S. Man.; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Colo., N. Mex., Tex. and Mexico.

Minn. valley: Throughout except N. E. district; hills and fields.

HERB.: *Sheldon 970*, Sleepy Eye; *Sheldon 1068*, Springfield; *Sheldon 815*, Sigel township, Brown Co.; *Taylor 925*, Glenwood; *Juni ? 12*, Glyndon; *Herb. Moyer 208*, Chippewa Co.

Asclepias quadrifolia LINN. Spec. (1753).

A. vanilla RAF. Am. Mo. Mag. (1818).

Wats. and Coult., Gray's Man. 6 ed. 342; Britt., Fl. N. J. 170; Upham, Fl. Minn. 114; Chap., Fl. S. St. 364; Cov., Fl. Ark. 203; Gray, Syn. Fl. II, 1, 96.

North America: Ont. to N. Eng., N. J. and N. Car.; W. to Minn. and Ark.

Minn. valley: Reported from E. edge; doubtful; no Minn. specimens seen.

Asclepias ovalifolia DECN. DC. Prodr. VIII, 567 (1844).

A. variegata var. *a.* HOOK. Fl. Bor.-Am. II, 252 (1840).
A. nuttalliana GRAY, Man. 2 ed. 352, 704 (1852).

Wats. and Coult., Gray's Man. 6 ed. 342; Webb., Fl. Neb. 141; Mac., Fl. Can. I, 319; Upham, Fl. Minn. 114; Coult., Fl. Colo. 241; Gray, Syn. Fl. II, 1, 95.

North America. Man., Assiniboia and Saskatchewan to Rocky mts.; S. to N. Ill., Wisc., Minn., Iowa, Dak., Neb. and Kan.

Minn. valley: Throughout; most abundant S. W. and W. prairies.

HERB.: *Sheldon 606*, Waseca; *Taylor 178*, Janesville; *Menzel 4*, Pipestone City; *Herrick 253*, Minneapolis; *Ankeny 5*, Stillwater; *Roberts 109*, White Bear; *Kassube 205*, Minneapolis; *Sandberg 470*, Red Wing; *Herb. Moyer 204, 205*, Chippewa Co.; *Herb. Wickersheim 109*, Idlewild, Lincoln Co.

Asclepias exaltata (LINN.) MUHL. Cat. 28 (1813).

A. syriaca var. *exaltata* LINN. Spec. ed. 2. 313 (1762).

A. phytolaccoides PURSH, Fl, Am. 180 (1814).

Wats. and Coult., Gray's Man. 6 ed. 342; Upham, Fl. Minn. 114; Mac., Fl. Can. I, 319; Chap., Fl. S. St. 262; Gray, Syn. Fl. II, 1, 92; Britt., Fl. N. J. 169.

North America: Ont. and N. Eng. to Minn,; S. to N. J. and Ga.; W. to Ark.

Minn. valley: Forest district; moist woods and thickets

HERB.: *Ballard 471*, Prior's lake, Scott Co.; *Sheldon 617*, Waseca; *Sheldon 617a*, Wilton, Waseca Co.; *Ballard 205*, Jordan, Scott Co.; *Herrick 252*, Minneapolis; *Sandberg 469*, Red Wing.

Asclepias obtusifolia MICHX. Fl. N. Am. I, 113 (1803).

A. purpurascens WALT. Fl. Car. 103 (1788).

Wats. and Coult., Gray's Man. 6 ed. 341; Britt., Fl. N. J. 170; Webb., Fl. Neb. 141; Upham, Fl. Minn. 115; Chap., Fl. S. Sts. 364; Coult., Fl. Colo. 239; Cov., Fl. Ark. 203; Gray, Syn. Fl. II, 1, 91 and Syn. Suppl. II, 401; Coult., Fl. Tex. 266.

North America: Minn. and Dak. to Colo., Neb., Ark. and Tex.; E. across continent to N. Eng., N. J., N. Car. and Fla.

Minn. valley: Reported from S. E. edge; doubtful sandy fields or woods.

Asclepias sullivantii ENGELM. Gray Man. 1 ed. 366 (1848).

Wats. and Coult., Gray's Man. 6 ed. 341; Webb., Fl. Neb. 141; Upham, Fl. Minn. 114; Gray, Syn. Fl. II, 1, 91.

North America: Minn. and Dak. to Neb., Kan. and Ohio.

Minn. valley: Forest district and W. to Pommes des Terres, at least; rich woods and banks of streams.

HERB.: *Taylor 580*, Minnesota lake; *MacM* and *Sheld. 45*, Brainerd.

Asclepias syriaca LINN. Spec, ed. 2, 313 (1762).

A. cornuti DECN. in DC. Prodr. VIII, 564 (1844).

Wats. and Coult., Gray's Man. 6 ed. 341; Britt., Fl· N. J. 169; Webb., Fl. Neb. 141; Chap., Fl. S. St. 362; Mac., Fl. Can. I, 319; Herd., Fl. Eur. Russ. 86; Nym., Fl. Eur.; Gray, Syn. Fl. II, 1,91 and Syn. Suppl. II, 401.

Russia in Europe; N. Asia.

North America: N. Br., Q., Ont. to Saskatchewan; S. to N. Eng., N. J. and N. Car.; W. to Minn., and Neb.—spreading throughout continent.

Minn. valley: Throughout; rich meadows and edges of thickets or streams.

HERB.: *Ballard 26m*, Chaska; *Taylor 579*, Minnesota lake; *Ballard 258*, Jordan, Scott Co.; *Sheldon 1552*, Lake Benton; *Herrick 251*, Minneapolis; *Kassube 204*, Minneapolis; *Sandberg 468*, Cannon Falls; *Herb. Sheld. 1697*, Minneapolis; *Herb. Moyer 203*, Montevideo.

Asclepias speciosa TORR. Ann. Lyc. N. Y. II, 218 (1834).

A. douglasii HOOK. Fl. Bor.-Am. II, 53 (1840).

Wats. and Coult., Gray's Man. 6 ed. 341; Webb., Fl. Neb. 141; Upham, Fl. Minn. 114; Brew. and Wats., Fl. Calif. I, 475; Coult., Fl. Colo. 239; Mac., Fl. Can. I, 319; II, 341; Roth., Wheel. Exp. 188; Wats., King Exp. 282; Cov., Fl. Ark. 203; Gray, Syn. Fl. II, 1, 91.

North America: Man. and Assiniboia to Rocky mts., Brit. Col. and Oregon; S. to Yosemite-valley; E. to Utah, Ark., Neb., Minn.

Minn. valley: Probably throughout; especially S. and W.; fields and river banks.

HERB.: *Taylor 727*, Wells, Faribault Co.; *Herb. Moyer 202*, Montevideo.

Asclepias incarnata LINN. Spec. ed. 2, 314 (1762).

A. pulchra WILLD. Spec. I, 1207 (1798).

A. amoena BRONGN. Ann. Sci. Nat. XXIV, t. 13 (1831).

Wats. and Coult., Gray's Man. 6 ed. 340; Britt., Fl. N. J. 170; Webb., Fl. Neb. 140; Upham, Fl. Minn. 114; Mac., Fl. Can. I, 318; Chap., Fl. S. St. 363; Cov., Fl. Ark. 203; Gray, Syn. Fl. II, 1, 90; Coult., Fl. Tex. 265 *in var.*

North America: N. Br., Q., Ont. to Saskatchewan and S. Man.; S. to N. J., N. Car. and Ga.; W. to Dak., Neb., Ark., La., Tex. *in var.*

Minn. valley: Throughout; edges of swamps and marshes.

HERB.: *Ballard 853*, Patterson lake, Carver Co.; *Taylor 568*, Minnesota lake; *Ballard 757*, Waconia; *Taylor 777*, Glenwood; *Sheldon 645*, Waseca; *Holzinger 188*, Winona Co.; *Sandberg 471*, Goodhue Co.; *Sandberg 472*, Cannon Falls; *Her-*

rick 254, Minneapolis; *Oestlund 151,* Hennepin Co.; *Herb. Moyer 206,* Chippewa Co.

Asclepias purpurascens LINN. Spec. 214 (1753).

A. amoena LINN. Spec. 217 (1753).

Wats. and Coult., Gray's Man. 6 ed. 340; Gray, Syn. Fl. II, 1, 90; Chap., Fl. S. St. 362; Mac., Fl. Can. I, 320; Upham, Fl. Minn. 114; Britt., Fl. N. J. 169; Webb., Fl. Neb. 141; Cov., Fl. Ark. 203.

North America: N. Eng., N. J. and N. Car. to W. Ont., Wisc. and Minn.; S. to Tenn. and Neb.

Minn. valley: Forest district to Cottonwood valley; edges of woods.

HERB.: *Sheldon 849,* Sleepy Eye; *Manning 7,* Lake City.

Asclepias tuberosa LINN. Spec. 316 (1753).

Wats. and Coult., Gray's Man. 6 ed. 340; Britt., Fl. N. J. 170; Webb., Fl. Neb. 141; Upham, Fl. Minn. 115; Mac., Fl. Can. I, 318; Coult., Fl. Colo. 239; Chap., Fl. S. St. 365; Roth., Wheel. Exp. 188; Cov , Fl. Ark. 203; Gray, Syn. Fl. II, 1, 89; Coult., Fl. Tex. 265.

North America: Ont. and L. Huron region to Minn., Dak. and Colo.; S. to N. Eng., N. J. and Fla.; W. to Arizona and Texas.

Minn. valley: Throughout; common; high knolls, prairies and railway embankments.

HERB.: *Taylor 558,* Minnesota lake; *Taylor 380,* Janesville; *Ballard 575,* Prior's lake, Scott Co.; *Ballard 342,* Jordan, Scott Co.; *Sheldon 775,* Sleepy Eye; *Sheldon 635,* Waseca; *Leiberg 54,* "Minnesota"; *Holzinger 189,* Winona Co.; *Herrick 255,* Minneapolis; *Sandberg 473,* Cannon Falls; *Herb. Sheld. 1754,* Minneapolis; *Herb. Moyer 207,* Montevideo.

LXXXIX. CONVOLVULACEAE. Morning-Glory Family.

Endlicher, *Gen. Pl.* 651 (1836-40); Lindl., *Veg. King.* 633 (1846)—*Cuscutaceae;* Bentham and Hooker, *Gen. Plant.* II, 865 (1876)—excl. *Nolanaceae;* Baillon, *Hist. Pl.* X, 305 (1891); Peter *in Engler and Prantl, Nat. Pflanz.* IV, 3 *a*, 1 (1891).

Genera: 25–26; temperate and tropical regions; most abundant within the tropics; shrubby climbers, principally tropical America; herbaceous forms widely distributed; center in W. Indies.

Species: 950-1000; 300 in *Ipomea;* 160 in *Cuscuta;* fossil, 10–12, from Tertiary of Europe and U. S.

VOLVULUS MED. Phil. Bot. II, 42 (1791).

Calystegia R. BR. Prodr. 483 (1810).

Baillon, *Hist. Pl.* X, 324; Benth. and Hook., *Gen. Pl.* II, 874; Durand, *Ind. Gen. Phan.* 286; O. Kuntze, *Rev. Gen.* II, 447; Schenck, *Palaeophyt.* 776; Engler and Prantl, *Nat. Pflanz.* IV, 3 *a*, 36 (Peter).

Living species: 7; temperate and subtropical regions. N. America, 3–4; W. coast, 1; Atl. regions, 2; W. Tex., 1.

Fossil species: *Convolvulus*, Tertiary, Frankfort (*Ludwig*).

Volvulus spithameus (LINN.) OK. Rev. Gen. II, 447 (1891).

Convolvulus spithameus LINN. Spec. 158 (1753).
Calystegia spithameus PURSH, Fl. Am. I, 434 (1814).
C. tomentosa PURSH, Fl. Am. 434 (1814).

Wats. and Coult., Gray's Man. 6 ed. 369; Britt., Fl. N. J. 180; Upham, Fl. Minn. 110; Mac., Fl. Can. I, 345; Chap., Fl. S. St. 345; Gray, Syn. Fl. II, 1, 215; Engl. Pet., Nat. Pflanz. IV, 3 *a*, 36.

North America: N. S., Q., Ont., Man. and Saskatchewan; S. to Minn. and Fla.

Minn. valley: N. E. district; rare; dry roadsides and embankments.

HERB.: *Kassube 194*, Minneapolis; *Holzinger 178*, Winona Co.; *Herrick 244*, St. Louis river; *Holzinger 179*, Winona Co.

Volvulus sepium (LINN.) JUNGER, Oestr. Bot. Zeit. 133 (1891).

Convolvulus sepium LINN. Spec. 218 (1753).
Calystegia sepium R. BR. Prodr. 483 (1810).

Wats. and Coult., Gray's Man. 6 ed. 369; Britt., Fl. N J. 179; Webb., Fl. Neb. 134; Upham, Fl. Minn. 110; Mac., Fl. Can. I, 345, 569; Chap., Fl. S. St. 344; Coult., Fl. Colo. 265; Brew. and Wats., Fl. Calif. I, 533; Forbes and Hems., Fl. Sin. II, 164; Hook., Fl. Gt. Brit. 284; Led., Fl. Ross. III, 94; Nym., Fl. Eur.; Roth., Wheel. Exp. 205 *in var.*; Gray, Syn. Fl. II, 1, 215; Suppl. Syn. II, 435 *in var.*; Hart., Fl. Scand. I, 74; Engl. Pet., Nat. Pflanz. IV, 3 *a*, 36; Coult., Fl. Tex. 292 *in var.*

N. Africa; most Europe; Asia to China and Dahuria; Australia and New Zealand.

North America: Throughout Can. to N. W. T.; S. to N. J. and Del.; W. to Utah, Minn., Neb. and Colo.

Minn. valley: Throughout; river banks and thickets, climbing over shrubbery.

HERB.: *Taylor 22*, Elysian; *Ballard 501*, Prior's lake, Scott Co.; *Sheldon 1553*, Lake Benton; *Ballard 344*, Helena, Scott Co.; *Sheldon 25*, Elysian; *Sheldon 376*, Madison Lake; *Ballard 133*, Chaska; *Ballard 751*, Waconia; *Herrick 242*, St. Louis river; *Herrick 243*, Minneapolis; *Kassube 193*, Minneapolis; *Sandberg 456*, Red Wing; *Herb. Sheld. 1701*, Minneapolis; *Herb. Moyer 196*, Chippewa river, near Montevideo.

CUSCUTA LINN. Gen. 89 (1737).

Epilinella and **Engelmannia** PFEIFF. Bot. Zeit. 673 (1845).

Cuscutina PFEIFF. l. c. 492 (1846).

Monogynella, Cussutha and **Succuta** DESMOUL. Etud. Cusc. 65, 66, 74 (1853).

Grammica LOUR. Fl. Cochinch. 170 (1790).

Pfeifferia BUCHING. Ann. Sci. Nat. 3, V, 88 (1846).

Lepidanche ENGELM. Sill. Journ. XLIII, 343 (1842).

Buchingera SCHULTZE, Jahrb. Pharm. (1847).

Baillon, *Hist. Pl.* X, 330; Benth. and Hook., *Gen. Pl.* II, 881; Durand, *Ind. Gen. Phan.* 287; Engler and Prantl, *Nat. Pflanz.* IV, 3 *a*, 38 (Peter).

Living species: 160; temperate and warmer regions. N. America, 21; Europe, 12; Russian Europe, 7; California, 8; E. Sts., 10; Rocky mts., 6; S. Sts., 8; Pl. Wheel., 5; Pl. King, 3; W. Tex., 12.

Cuscuta paradoxa RAF. Ann. Nat. (1820).

C. glomerata CHOISY, Mem. Genev. (1841).

Lepidanche compositarum ENGELM. Am. Jour. Sci. XLIII (1842).

Wats. and Coult., Gray's Man. 6 ed. 372; Webb., Fl. Neb. 134; Upham, Fl. Minn. 111; Wats., King Exp. 472; Cov., Fl. Ark. 205; Gray, Syn. Fl. II, 1, 222; Engl. Pet., Nat. Pflanz. IV, 3 *a*, 39; Coult., Fl. Tex. 295.

North America: Ohio to Minn., Neb., Kan. and Tex.

Minn. valley: Throughout; on Composites, especially *Helianthus* and *Solidago*.

HERB.: *Taylor 849*, Glenwood; *Sheldon 1309*, Lake Benton; *Kassube 196*, Minneapolis; *Sandberg 458*, Red Wing; *Herrick 245*, Minneapolis; *Herb. Moyer 197*, Chippewa river, near Montevideo; *Herb. Wickersheim 104*, Idlewild, Lincoln Co.

Cuscuta gronovii WILLD. Reliq. in R. and S. Syst. VI, 205 (1820).

C. americana LINN. Spec. 124 (1753) *as to pl. Gronov.*

C. umbrosa BEY. Hook. Fl. Bor-Am. II, 78 (1840) *in part.*

C. vulgivaga ENGELM. Am. Jour. Sci. XLIII, 338 (1842).

Wats. and Coult., Gray's Man. 6 ed. 372; Britt., Fl. N. J. 180; Webb., Fl. Neb. 134; Chap., Fl. S. St. 347; Mac., Fl. Can. I, 347; Coult., Fl. Colo. 267; Upham, Fl. Minn. 111; Wats., King Exp. 472; Cov., Fl. Ark. 206; Gray, Syn. Fl. II, 1, 221; Engl. Pet., Nat. Pflanz. IV, 3*a*. 39; Coult., Fl. Tex. 295.

North America: N. S., N. Br., Ont. to S. Man.; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Colo., Tex. and Ark.

Minn. valley: Throughout; on coarse herbs and shrubs; abundant on *Impatiens* and *Salix*.

HERB. *Ballard 592*, Prior's lake, Scott Co.; *Sheldon 660*, Waseca; *Sheldon 717*, Sleepy Eye; *Taylor 1001*, Glenwood; *Sheldon 1082*, Springfield; *Sandberg 457*, Cannon Falls; *Bailey 180*, Vermilion lake; *Holtz. 40*, Cedar lake, Hennepin Co.

Cuscuta gronovii WILLD. var. **saururi** (ENGELM.).

C. saururi ENGELM. Am. Jour. Sci. XLIII (1842).

C. gronovii var, *latiflora* ENGELM. Trans. St. L. Acad. I, III, (1859).

Wats. and Coult., Gray's Man. 6 ed. 372; Upham, Fl. Minn. 111; Wats., King Exp. 472; Gray, Syn. Fl. II, 1, 222.

North America: Mass. and N. Car. to Minn., Man. and Mo.

Minn. valley: N. E. district; on *Impatiens.*

Cuscuta coryli ENGELM. Am. Jour. Sci. XLIII, 337 (1842).

C. umbrosa BEYRICH, Sched. (1851) *in part.*

C. inflexa ENGELM. Rev. Cusc. 502 (1859).

Wats. and Coult., Gray's Man. 6 ed. 372; Gray, Syn. Fl. II, 2, 221; Coult., Fl. Colo. 267; Webb., Fl. Neb. 134; Chap., Suppl. S. St. 641.

North America: N. Eng. to Ark., Neb., Colo. and Dak.

Minn. valley: W. district; on *Ceanothus* and *Corylus.*

HERB.: *Wickersheim 132*, Ash lake, Lincoln Co.

Cuscuta cephalanthi ENGELM. Am. Jour. Sci. 333 (1842).

C. tenuiflora ENGELM. Gray's Man. 1 ed. 350 (1848).

Wats. and Coult., Gray's Man. 6 ed. 371; Britt., Fl. N. J. 180; Mac., Fl. Can. I, 347; Upham, Fl. Minn. 110; Brew. and Wats., Fl. Calif. I, 535; Gray, Syn. Fl. II, 220; Wats., King Exp. 273, 471; Engl. Pet., Nat. Pflanz. IV, 3*a*, 39; Webb., Appx. Neb. 36; Coult., Fl. Tex. 294.

North America: Saskatchewan to Minn., Wisc., Penn. and N. J.; S. to Ark. and Tex.; W. to Utah? and Arizona.

Minn. valley: Reported from Blue Earth Co., and probably sparingly throughout forest district; on tall herbs and shrubs.

Cuscuta arvensis BEYRICH, Sched. (1851).

C. arvensis var. *pentagona* ENGELM. Gray's Man. ed. II, 336 (1852).

C. pentagona ENGELM. Am. Jour. Sci. XLIII, 342 (1842).

C. arvensis var. *verrucosa* ENGELM. Gray's Man. ed. 2, 336 (1852).

C. verrucosa ENGELM. Am. Jour. Sci. XLIII, 340 (1842).

C. arvensis var. *calycina* ENGELM. Am. Jour. Sci. l. c. (1842).

Wats. and Coult., Gray's Man. 6 ed. 371; Gray, Syn. Fl. II, 2, 220; Webb., Fl. Neb. 134; Britt., Fl. N. J. 180; Chap., Fl. S. St. 347; Mac., Fl. Can. I, 346; Coult., Fl. Colo. 266; Brew. and Wats., Fl. Calif. I, 535; Coult., Fl. Tex. 294.

South America.

North America: N. S. and Ont. to N. J. and Fla.; W. to Minn., Mont. and Oregon; S. to Calif., Tex. and La.

Minn. valley: W. district to S. Central district; on small prairie herbs.

HERB.: *Sheldon 1435*, Pipestone; *Taylor 1143*, Glenwood; *Leiberg 106*, Blue Earth Co.; *MacM.* and *Sheld. 56*, Brainerd.

Cuscuta polygonorum ENGELM. Am. Jour. Sci. XLIII, 342 (1842).

C. chlorocarpa ENGELM. Gray's Man. ed. 1, 350 (1848).

Wats. and Coult., Gray's Man. 6 ed. 371; Upham, Fl. Minn. 110; Webb., Fl. Neb. 134; Wats., King Exp. 471; Cov., Fl. Ark. 206; Gray, Syn. Fl. II, 1. 220.

North America: Wisc. and Minn. to Penn. and Del.; S. to Neb. and Ark.

Minn. valley: Blue Earth Co. and perhaps whole forest district; on *Polygonum* and other herbs.

XC POLEMONIACEAE. Phlox Family.

Endlicher, *Gen. Pl.* 656 (1836-40); Bentham and Hooker, *Gen. Plant.* II, 820 (1876); Baillon, *Hist. Pl.* X, 332 (1891); Peter, *in Engler and Prantl, Nat. Pflanz.* IV, 3*a*, 40 (1891).

Genera: 8; Mexico and N. America; especially in western portion; a few in Siberia and the southern Cordilleran region.

Species: 200±; 190, N. America and Mexico.

PHLOX LINN. Gen. 148 (1737).

Armeria LINN. Systema (1735).

Baillon, *Hist. Pl.* X, 340; Benth. and Hook., *Gen. Pl.* II, 821; Durand, *Ind. Gen. Phan.* 279: Engler and Prantl, *Nat. Pflanz.* IV, 3*a*, 46 (Peter).

Living species: 30±, North America; 1 sp. in Siberia. Canada, 12; S. Sts., 11; Rocky mts., 8; E. Sts., 11; California and Pac. coast, 6–7; Pl. Wheel., 4; Pl. King, 4; W. Tex., 4.

Phlox divaricata LINN. Spec. 217 (1753).

P. canadensis SWEET, Brit. Fl. Gard. 221 (1823–1829).

P. glutinosa BUCKL. Am. Jour. Sci. XLV, 177 (1844).

Wats. and Coult., Gray's Man. 6 ed. 355: Mac., Fl. Can. I, 328; Webb., Fl. Neb. 134; Chap., Fl. S. St. 338; Upham, Fl. Minn. 110; Mac., Fl. Can. I, 566; Wats., King Exp. 462; Cov., Fl. Ark. 204; Gray, Syn. Fl. II, 1, 131; Engl. Pet., Nat. Pflanz. IV, 3*a*, 47.

North America: Q., Ont. to Owen Sound; S. to N. Y., Fla.; W. to Minn., Neb. and Ark.

Minn. valley: Throughout; prairies, woods and meadows.

HERB.: *Taylor 138*, Janesville; *Taylor 309*, Janesville, *Sheldon 81*, Elysian; *Ballard 401*, Jordan, Scott Co.; *Manahan 1*, Chatfield; *Holzinger 177*, Winona Co.; *Sandberg 454*, Cannon Falls; *Herb. Sheld. 1876*, Minneapolis; *Herb. Wickersheim 103*, Mankato; *Herb. Moyer 195*, Montevideo.

Phlox pilosa LINN. Spec. 216 (1753).

P. aristata MICHX. Fl. N. Am. I, (1803).
P. cuspidata SCHEELE, Linn. XXIII, 137 (1865).

Wats. and Coult., Gray's Man. 6 ed. 355; Britt., Fl. N. J. 174; Webb., Fl. Neb. 135; Chap., Fl. S. St. 339; Upham, Fl. Minn. 110; Mac., Fl. Can. I, 327; Wats., King. Exp. 462; Cov., Fl. Ark. 204; Gray, Syn. Fl. II, 1, 130; Engl. Pet., Nat. Pflanz. IV, 3 *a*, 47; Coult., Fl. Tex. 276.

North America: Ont. and Saskatchewan to Minn., N. J., Fla., Tex. and Ark.

Minn. valley: Throughout; prairies, banks and fields.

HERB.: *Sheldon 754*, Sleepy Eye; *Sheldon 1320*, Lake Benton; *Ballard 572*, Prior's lake, Scott Co.; *Ballard 642*, Chaska; *Ballard 98*, Shakopee, *Sheldon 537*, Waseca; *Taylor 343*, Janesville; *Sheldon 1599*, Lake Benton; *Sheldon 633a*, Wilton, Waseca Co.—*white-flowered forma albiflora; Taylor 577*, Minnesota lake; *MacMillan 10*, Glenwood; *Taylor 833*, Glenwood; *Taylor 773*, Glenwood; *Huntington 11*, Rock Co.; *Kassube 192*, Minneapolis; *Oestlund 144*, Ramsey Co.; *Leonard 40*, Minneapolis; *Oestlund 145*, Hennepin Co.; *Leonard 41*, Spring Valley; *Sandberg 453*, Red Wing; *Hammond 30*, Lake City; *Herb. Sheld. 1919*, Minneapolis; *Herb. Wickersheim 102*, Idlewild, Lincoln Co.; *Herb. Moyer 194*, Chippewa river, near Montevideo.

Phlox glaberrima LINN. Spec. 152 (1753).

P. revoluta AIK. Eat. Man. (1836).
? *P. carnea* SIMS.

Wats. and Coult., Gray's Man. 6 ed. 355; Upham, Fl. Minn. 109; Chap., Fl. S. St. 338; Gray, Syn. Fl. II, 1, 130; Wats., King Exp. 462; Cov., Fl. Ark. 204.

North America: N. Va. to Ohio, Minn. and Ark.; S. to Fla. and Tex.

Minn. valley: Forest district to New Ulm; rare; prairies and meadows along streams.

Phlox maculata LINN. Spec. 152 (1753).

P. pyramidalis SM. Exot. II, 87 (1804-1805).
P. reflexa SWEET, Brit. Fl. Gard. 232 (1823-1829).
P. penduliflora SWEET, Brit. Fl. Gard. Ser. 2, 46 (1831-1838).

Wats. and Coult., Gray's Man. 6 ed. 354; Britt., Fl. N. J. 174; Upham, Fl. Minn. 109; Chap., Fl. S. St. 338; Gray, Syn. Fl. II, 1, 129; Wats., King. Exp. 462; Cov., Fl. Ark. 204; Engl. Pet., Nat. Pflanz. IV, 3*a*, 47.

North America: N. J. to Minn.; S. to Fla. and Ark.

Minn. valley: N. E. district; infrequent; wet meadows and banks of streams.

HERB.: *Thuet 1*, Dodge Co.

COLLOMIA NUTT. Gen. I, 126 (1818).

Courtoisia REICH. Ic. Pl. Exot. III 4, t. 208 (1830).

Phloganthea CAV. ex Peter, l. c. (1891).

Baillon, *Hist. Pl.* X, 340; Benth. and Hook., *Gen. Pl.* II, 822; Durand, *Ind. Gen. Phan.* 279; Engler and Prantl, *Nat. Pflanz.* IV, 3*a*, 48 (Peter).

Living species: 18; Western N. America and Chile. N. America, 10-11; West Mexico and S. America. S. W. America, 3; N. W. America, 7-8. *C. linearis* is the only one that comes into Atl. America.

Collomia linearis NUTT. Gen. I, 126 (1818).

Gilia linearis GRAY, Proc. Am. Acad. XVII, 223 (1882).

Navarretia linearis OK. Rev. Gen. II, 432 (1891).

Wats. and Coult., Gray's Man. 6 ed. 356; Mac., Fl. Can. I, 329; Upham, Fl. Minn. 110; Coult., Fl. Colo. 249; Brew. and Wats., Fl. Calif. I, 487; Gray, Syn. Fl. II, 1, 135 and 408; Engl. Pet., Nat. Pflanz. IV. 3 *a*. 48; Webb., Appx. Neb. 36.

North America: N. Br. to Saskatchewan and Vancouver; N. to Ft. Franklin on Mackenzie; S. in Sierras to Calif.; in Rocky Mts. to Colo.; S. to Minn., Dak. and Neb.

Minn. valley: S. W. edge and far W. in Dakota; prairies and high knolls.

HERB.: *Sandberg 455*, Red Wing.

POLEMONIUM LINN. Gen. 131 (1737).

Baillon, *Hist. Pl.* X, 339; Benth. and Hook., *Gen. Pl.* II, 823; Durand, *Ind. Gen. Phan.* 279.

Living species: 8–9; Europe, Asia, temperate N. America, Mexico and Chile. Russia, 2; Europe, 1; N. America, 8; Rocky mts., 5; California and Pac. coast, 6–7; Canada, 4; E. Sts., 2; S. Sts., 1; Pl. King, 5; Pl. Wheel., 3.

Polemonium reptans LINN. Spec. ed. 2, (1762).

Wats. and Coult., Gray's Man. 6 ed. 356; Britt., Fl. N. J. 175; Chap., Fl. S. St. 340; Upham, Fl. Minn. 109; Gray, Syn. Fl. II, 1, 151; Wats., King Exp. 470; Cov., Fl. Ark. 205.

North America: N. J. to Minn.; S. to Alab., Mo. and Ark.

Minn. valley: New Ulm to Alexandria and W?; woods and thickets.

HERB.: *Sandberg 451*, Goodhue Co.; *Holzinger 176*, Winona Co.; *Hammond 2*, Lake City; *Sandberg 452*, Cannon Falls.

XCI. HYDROPHYLLACEAE. Waterleaf Family.

Endlicher, *Gen. Pl.* 658 (1836-40); Bentham and Hooker, *Gen. Plant.* II, 825 (1876); Baillon, *Hist. Pl.* X, 397 (1891)—*sub Boraginacées.*

Genera: 15; N. America; a very sparing representation in S. America, Africa and the tropics.

Species: 150; N. America; 3–4 around world and S. America or S. Africa.

MACROCALYX TREW. Nov. Act. Cur. II, 330 (1761).
Ellisia LINN. Spec. ed. II, Appx. (1763).
Nyctalea SCOP. Introd. 775 (1777).
Encrypta NUTT. Jour. Acad. Phil. 2, I, 158 (1848).

Baillon, *Hist. Pl.* X, 397; Benth. and Hook., *Gen. Pl.* II, 827; Durand, *Ind. Gen. Phan.* 280; O. Kuntze, *Rev, Gen.* II, 433 (1891).

Living species: 3; N. America; 1, Can., Rocky mts., E. Sts.; 2, California.

Macrocalyx nyctalea (LINN.) OK. Rev. Gen. II, 434 (1891).
Ipomea nyctalea LINN. Spec. (1753).
Polemonium nyctalea LINN. Spec. 2 ed. (1762).
Ellisia nyctalea LINN. Spec. 2 ed. Appx. 1662 (1763).
E. ambigua NUTT. Gen. I, 118 (1818).

Wats. and Coult., Gray's Man. 6 ed. 359; Britt., Fl. N. J. 176; Brew. and Wats., Fl. Calif. I, 505; Coult., Fl. Colo. 255; Mac., Fl. Can. I, 322; Upham, Fl. Minn. 109; Webb., Fl. Neb. 135; Cov., Fl. Ark. 205; Gray, Syn. Fl. II, 1, 157.

North America: Qu'Appele to Saskatchewan and N. W. T.; S. to N. Eng., N. J. and Va.; W. to Minn., Mo., Dak., Neb., Colo. and Arkansas river.

Minn. valley: Throughout; grassy places, rich woods and banks of streams or lakes.

HERB.: *Ballard 348,* Helena, Scott Co.; *Taylor 182,* Janesville; *Ballard 80,* Chaska; *Taylor 350,* Janesville; *Sheldon 672,* Waseca; *Sheldon 135a,* Madison Lake; *Foote 3,* Worthington; *Herrick 241,* Minneapolis; *Sandberg 450,* Cannon Falls; *Holzinger 175,* Winona; *Herb. Sheld. 1766,* Ft. Snelling; *Herb. Wickersheim 101,* Idlewild, Lincoln Co.; *Herb. Moyer 193,* Chippewa river, near Montevideo.

HYDROPHYLLUM LINN. Gen. 124 (1737).
Viticella MITCH. Act. Med. Cur. VIII, 220 (1748).
Decemium RAF. Fl. Lud. 33 (1817).

Baillon, *Hist. Pl.* X, 397; Benth. and Hook., *Gen. Pl.* II, 826; Durand, *Gen. Phan.* 279.

Living species: 6; N. America; Canada, 5; S. Sts., 4;

E. Sts., 4; Rocky mts., 2; Pl. King, 2; Pl. Wheel., 2; California, 3.

Hydrophyllum appendiculatum MICHX. Fl. N. Am. I, 134 (1803).

Hydrophyllum trilobum RAF. Fl. Lud. 33 (1817).
Nemophila paniculata SPRENG. Syst. I, 569 (1825).
Decemium hirtum RAF. Med. Fl. II, 215 (1830).

Wats. and Coult., Gray's Man. 6 ed. 358; Mac., Fl. Can. I, 332; Upham, Fl. Minn. 109; Gray, Syn. Fl. II, 1, 155.

North America: Ont. to Minn.; S. to N. Car., Iowa and Mo.

Minn. valley: Forest district except far N. E.; woods and rich, shaded banks.

HERB.: *Sheldon 400,* Stony Point, Lake Madison, Blue Earth Co.; *Sheldon 556,* Waseca.

Hydrophyllum virginianum LINN. Spec. 208 (1753).

H. virginicum AUCT.

Wats. and Coult., Gray's Man. 6 ed. 358; Britt., Fl. N. J. 175; Upham, Fl. Minn. 109; Mac., Fl. Can. I, 331; II, 343; I, 567; Chap., Fl. S. St. 334; Webb., Fl. Neb. 135; Coult., Fl. Colo. 254; Brew. and Wats., Fl. Calif. I, 502; Roth., Wheel. Exp. 201; Cov., Fl. Ark. 205; Gray, Syn. Fl. II, 1, 154.

North America: Q. to Georgian bay and Pac.; Vancouver, N. W. T. and Alaska; S. to Washington and Oregon; S. in mts. to N. Mex.; S. in Mississippi valley to Ark. and La.; along Appalachians to N. Eng., N. Y., Ga.

Minn. valley: Throughout; rich woods, river banks and lake shores.

HERB.: *Taylor 6,* Elysian; *Taylor 623,* Minnesota lake; *Taylor 119,* Janesville; *Sheldon 858,* Sleepy Eye; *Ballard 41,* Chaska; *Herrick 239,* Minneapolis; *Kassube 191,* Minneapolis; *Herrick 240,* Minneapolis; *Herb. Sheld. 1785,* Minneapolis; *Herb. Wickersheim 100,* Idlewild, Lincoln Co.; *Herb. Moyer 192,* Montevideo.

PHACELIA JUSS. Gen. 129 (1789).

Aldea R. and P. Prodr. Per. 19 (1798).
Eutoca R. BR. Appx. Frankl. Exp. 764 (1823).
Cosmanthus NOLTE, ex DC. Prodr. IX, 291 (1845).
Microgenetes A. DC. l. c. (1845).
Whitlavia HOOK. Bot. Mag. t. 4813 (——).
Heteryta RAF. Jour. Phys. LXXXIX, 101 (1819).
Helminthosporium Torr. Herb.

Baillon, *Hist. Pl.* X, 398; Benth. and Hook., *Gen. Pl.* II, 827; Durand, *Ind. Gen. Phan.* 280.

Living species: 65±; N. America, Mexico, Andes of Chile; N. America, 55; S. Sts., 5; Canada, 4; Rocky mts., 6;

Pl. King, 17; California, 40–45; E. Sts., 6; Pl. Wheel., 10; W. Tex., 8.

Phacelia purshii BUCKL. Am. Jour. Sci. XLV, 172 (1844).

P. fimbriata PURSH, Fl. Am. (1814) *not Michx.*

Cosmanthus fimbriatus A. DC. Prodr. IX, 297 (1845).

Wats. and Coult., Gray's Man. 6 ed. 359; Chap., Fl. S. St. 355; Upham, Fl. Minn. 109; Gray, Syn. Fl. II, 1, 162; Cov., Fl. Ark. 205.

North America: W. Penn. to Minn.; S. to Tenn., N. Car., Alab. and Ark.

Minn. valley: Reported from S. E. edge; rare or doubtful; woods and shaded banks.

XCII. BORRAGINACEAE. Borage Family.

Lindl., *Veg. King.* 655 (1846); Lehm., *Pl. Asp.* (1818)—*Asperifoliae;* Endlicher, *Gen. Pl.* 643 (1836–40)—*Cordiaceae;* Lindl., *Veg. King.* 653 (1846) —*Ehretiaceae;* Bentham and Hooker, *Gen. Pl.* II, 832 (1876); Baillon, *Hist. Pl.* X, 343 (1891)—excl. *Hydrophyllaceae.*

Genera: 75; (B. and H.—68); cosmopolitan; especially abundant in the Orient.

Species: 1250±; 3–4 doubtful fossils in Tertiary; *Boraginites.*

ONOSMODIUM MICHX. Fl. Bor.-Am. I, 132 (1803).

Purshia SPRENG. Lehm. Asperif. 382 (1818).

Osmodium RAF. N. Y. Med. Rep. II, V, 350 (1808).

Baillon, *Hist. Pl.* X, 384; Benth. and Hook., *Gen. Pl.* II, 859; Durand, *Ind. Gen. Phan.* 284.

Living species: 6; N. America and Mexico. N. Amer., 4; S. Sts., 2; Canada, 2; Rocky mts., 1; E. Sts., 1; Pl. Wheel., 1; W. Tex., 2.

Onosmodium carolinianum (LAM.) DC. Prodr. X, 70 (1846).

Lithospermum carolinianum LAM. Ill. and Enc. Meth. Suppl. II, 837 (1811).

Purshia mollis LEHM. Asper. 383 (1821).

Onosmodium molle BECK, Bot. (1833).

Wats. and Coult., Gray's Man. 6 ed. 366; Coult., Fl. Colo. 264; Webb., Fl. Neb. 135; Upham., Fl. Minn. 106; Chap., Fl. S. St. 331; Mac., Fl. Can. I, 342; Cov., Fl. Ark. 206; Gray, Syn. Fl. II, 1, 206; Coult., Fl. Tex. 288.

North America: Ont., W. N. Y. and Penn. to Minn., Colo. and Neb.; S. to Ga., Ark. and Tex.

Minn. valley: Districts E. of Pommes des Terres river; river banks and edges of sloughs.

HERB.: ?*Sandberg 443,* Cannon Falls; *Ballard 185,* Jordan, Scott Co.; *Taylor 644,* Minnesota lake; *Herb. Moyer 189,* Montevideo.

Onosmodium carolinianum (LAM.) DC. var. **molle** (MICHX.) GRAY, Syn. II, 1, 206 (1886).

Onosmodium molle MICHX. Fl. N. Am. I, 133 (1803).
Purshia mollis LEHM. Asper. 383 (1821).

Wats. and Coult., Gray's Man. 6 ed. 367; Mac., Fl. Can. I, 343; Webb., Fl. Neb. 135; Upham, Fl. Minn. 107; Coult., Fl. Colo. 264; Coult., Fl. Tex. 288.

North America: Man. and Saskatchewan to 49° N. lat.; S. to Neb., Ill. and Tex.; W. to Colo. and Utah.

Minn. valley: Throughout; river banks and waste places or dry fields.

HERB.: *Sheldon 1505*, Lake Benton; *Sheldon 736*, Sleepy Eye; *Taylor 352*, Janesville; *Ballard 101*, Shakopee; *Taylor 810*, Glenwood; *Leonard 38*, Spring Valley.

LITHOSPERMUM LINN. Gen. 101 (1737).

Rhytispermum LINK, Handb. I, 579 (1829).
Aegonychon S. F. GRAY, Arr. II, 354 (1821).
Batschia GMEL. Syst. II, 315 (1806).
Pentalophum DC. Prodr. X, 86, (1846).
Margarospermum DECNE. Jacq. Voy. Bot. 122 (1844).
Lithodora GRISEB. Spic. Fl. Rum. II, 85 (1844).
Gymnoleima DECNE Jacq. Voy. Bot. 122 (1844).

Baillon, *Hist. Pl.* X, 383; Benth. and Hook., *Gen. Pl.* II, 860; Durand, *Ind. Gen. Phan.* 284.

Living species: 40±; extra-tropical regions, N. hemisphere; also W. S. America and S. Africa; species in S. hemisphere doubtfully endemic. Europe, 16; Russia, 7; Russian Europe, 4; N. America, 9; S. Sts., 5; Rocky mts., 5; California, 2; Canada, 5; E. Sts., 4; Pl. Wheel., 3; Pl. King, 4; W. Tex., 5.

Lithospermum angustifolium MICHX. Fl. N. Am. I, 130 (1803).

Batschia longiflora PURSH, Fl. Am. 132 (1814).
B. decumbens NUTT. Gen. I, 114 (1818).
Lithospermum longiflorum SPRENG. Syst. (1825).
L. breviflorum ENGELM. and GRAY, Pl. Lindh. I, 44 (1845).
Pentalophus longiflorus and *mandanense* A. DC. Prodr. X, 87 (1846).

Wats. and Coult., Gray's Man. 6 ed. 366; Mac., Fl. Can. I, 342; Upham, Fl. Minn. 107; Webb., Fl. Neb. 135; Coult., Fl. Colo. 264; Wats., King Exp. 238; Cov., Fl. Ark. 206; Gray, Syn. Fl. II, 1, 205; Coult., Fl. Tex. 288.

North America: Man., Saskatchewan and Brit. Col. to 55° N. lat.?; S. to Utah, Arizona, Tex., Ark., Neb., Ill. and Ind.

Minn. valley: Throughout; river banks and edges of sloughs.

HERB.: *Ballard 379,* Jordan, Scott Co.; *Sheldon 798,* Sleepy Eye; *Herrick 235,* Minneapolis; *Kassube 186,* Minneapolis; *Sandberg 444,* Cannon Falls; *Sandberg 445,* Goodhue Co.; *Holzinger 171,* Winona Co.; *Herb. Wickersheim 98,* Idlewild; *Herb. Moyer, 190,* Montevideo.

Lithospermum carolinense (WALT.).

Anonymos caroliniensis WALT. Fl. Car. 91 (1788).
Batschia carolinensis GMEL. Syst. I, 315 (1805).
B. gmelini MICHX. Fl. N. Am. I, 130 (1803).
Anchusa hirta MUHL. Cat. (1813).
Lithospermum hirtum LEHM. Asper. 305 (1818).
Batschia caroliniana R. S. Syst. IV, 52 (1819).
Lithospermum decumbens TORR. Ann. Lyc. N. Y. II, 225 (1834).
L. bejariense DC. Prodr. X. 88 (1846).

Wats. and Coult., Gray's Man. 6 ed. 366; Mac., Fl. Can. I, 342; Upham, Fl. Minn. 107; Coult., Fl. Colo. 264; Chap., Fl. S. St. 352; Wats., King Exp. 238; Cov., Fl. Ark. 206; Gray, Syn. Fl. II, 1, 205; Coult., Fl. Tex. 288.

North America: Ont. to L. Huron and N. Y.; S. to Fla.; W. to Minn., Neb., Colo., Ark. and Tex.

Minn. valley: Throughout; waste or barren land.

HERB.: *Ballard 641,* Chaska; *Ballard 247,* Jordan, Scott Co.; *Sheldon 696,* Waseca; *Ballard 202,* Jordan, Scott Co.; *Taylor 557,* Minnesota lake; *Sheldon 973,* Sleepy Eye; *Kassube 187,* Minneapolis; *Herrick 236,* Minneapolis; *Holzinger 172,* Winona Co.; *Holzinger 173,* Winona; *Sandberg 446,* Cannon Falls; *Hammond 28,* Lake City.

Lithospermum canescens (MICHX.) LEHM. Asper. 305 (1818).

Batschia canescens MICHX. Fl. N. Am. I, 130 (1803).
Anchusa canescens MUHL. Cat. (1813).
Lithospermum sericeum LEHM. Asper. 306 (1818).

Wats. and Coult., Gray's Man. 6 ed. 366; Mac., Fl. Can. I, 342; Chap., Fl. S. St. 332; Upham, Fl. Minn. 107; Webb., Fl. Neb. 135; Britt., Fl. N. J. 178; Coult., Fl. Colo. 264; Roth., Wheel. Exp. 203; Cov., Fl. Ark. 206; Gray, Syn. Fl. II, 1, 204.

North America: Ont. to Saskatchewan; S. to N. Y., N. J., Va. and Alab.; W. to Dak.. Neb., Ark., Arizona and N. Mex.

Minn. valley: Throughout; waste or gravelly soil and openings in forest.

HERB.: *Taylor 185,* Janesville; *Herrick 237,* Minneapolis; *Sandberg 447,* Red Wing; *Sandberg 448,* Cannon Falls; *Oestlund 143,* Ramsey Co.; *Kassube 188,* Minneapolis; *Leonard 39,* Fillmore Co.; *Hammond 29,* Lake City; *Herb. Wickersheim 99,* Idlewild, Lincoln Co.; *Herb. Moyer 191,* Montevideo.

Lithospermum latifolium MICHX. Fl. N. Am. I, 131 (1803).
L. officinale var. *latifolium* WILLD. Spec. I, 751 (1798).
L. lutescens COL. Cat. Pl. G. Rap. 29 (1874).
Wats. and Coult., Gray's Man. 6 ed. 365; Mac., Fl. Can. I, 341; Upham, Fl. Minn. 107; Gray, Syn. Fl. II, 1, 203; Webb., Appx. Neb. 37.

North America: Ont. and N. Y. to Minn.; S. to Va., Neb. and Ark.

Minn. valley: Forest district, especially S.; edges of woods and thickets.

HERB.: *Sheldon 516*, Waseca; *Taylor 4*, Elysian; *Sheldon 127*, Madison Lake; *Taylor 258*, Janesville; *Sheldon 621*, Wilton, Waseca Co.; *Kassube 185*, Minneapolis; *Herrick 234*, Minneapolis; *Getty 3*, Wright Co.

MYOSOTIS LINN. Gen. 102 (1737).
Exarrhena R. BR. Prodr. 495 (1810).
Strophiostoma TURCZ. Bull. Soc. Imp. Mosc. 258 (1840).
Baillon, *Hist. Pl.* X, 386; Benth. and Hook., *Gen. Pl.* II, 858; Durand, *Ind. Gen. Phan.* 284; Schenck, *Palaeophyt.* 777.

Living species: 40±; temperate and cold regions of N. hemisphere, also in S. hemisphere of old world, extra-tropical. Europe, 16; Russian Europe, 10; N. America, 4; Canada, 4; Rocky mts; 1; California, 2; E. Sts., 3; S. Sts., 2; W. Tex., 1.

Fossil species: Forest bed of Norfolk and Mandesley *M. caespitosa* Schultes (*Schenck*).

Myosotis virginica (LINN.). B. S. P. Cat. N. Y. (1888).
Lycopsis virginica LINN. Spec. 139 (1853).
Myosotis verna NUTT. Gen. II, addit. (1818).
M. inflexa ENGELM. Am. Jour. Sci. XLVI, 98 (1845).
M. stricta GRAY. Man. 1 ed. (1848).
Wats. and Coult., Gray's Man. 6 ed. 365; Britt., Fl. N. J. 178; Upham, Fl. Minn. 107; Mac., Fl. Can. I, 341; Chap., Fl. S. St., 333; Brew. and Wats., Fl. Calif. I, 522; Cov., Fl. Ark. 206; Mac., Fl. Can. I, 569 *in var;* Gray, Syn. Fl. II, 1, 202; Coult., Fl. Tex. 287.

North America: Ont. to Man. and to Brit Col. *in var.*; S. to N. Eng., N. J. and Fla.; W. to Oregon, Tex., Mo. and Ark.

Minn. valley: Reported from S. W. corner; rare; dry or waste places, or on ledges of rock.

Myosotis arvensis (LINN.) WILLD. Spec. I, 747 (1797).
M. scorpioides var. *arvensis* LINN. Spec. 188 (1753).
M. intermedia LINK, DC. Prodr. X, 105 (1846).
Wats. and Coult., Gray's Man. 6 ed. 365; Britt., Fl. N. J. 178; Mac., Fl. Can. I, 340; Upham, Fl. Minn. 107; Hook., Fl. Gt. Brit. 281: Nym.,

Fl. Eur; Herd., Fl. Eur. Russ. 92; Gray, Syn. Fl. II, 1, 202; Hart., Fl. Scand. I, 77.

Northern Africa; Europe; N. and W. Asia to India.

North America: N. B. and N. S. to L. Huron, and S. to N. J. and La.; W. to Minn.?

Minn. valley?: N. E. district; fields and waste or gravelly places.

HERB.: *Herrick 238*, Minneapolis.

LAPPULA HALL (1745). ex O. Kuntze l. c. (1891).

Echinospermum SWARTZ, Lehm. Asperif. 113 (1818).
Rochelia R. and S. Syst. IV, 11 (1819).
Guettardia MANETTI (1751). ex O. Kuntze l. c. (1891).
Cynoglossospermum SIEGESB. Fl. Petr. 40 (1736).
Heterocaryum A. DC. Prodr. X, 144 (1846).

Baillon, *Hist. Pl.* X, 372; Benth. and Hook., *Gen. Pl.* II, 850; Durand, *Ind. Gen. Phan.* 283; O. Kuntze, *Rev. Gen.* II, 436.

Living species: 50±; all temperate regions; S. Africa, Australia. Especially N. hemisphere in old world. Europe, 5; Russia, 10; N. America, 7–8; Canada, 7–8; S. Sts., 3; California, 4; E. Sts., 4; Rocky mts., 3–4; Pl. Wheel., 2; Pl. King, 3; W. Tex., 1.

Lappula virginiana (LINN.) GREENE, Pittonia II, 182 (1891).

Myosotis virginiana LINN. Spec. 131 (1753).
M. virginica LINN. Spec. 2 ed. 189 (1762).
Echinospermum virginicum LEHM. Asper. 120 (1818).
Cynoglossum morisoni DC. Prodr. X, 155 (1846).
Echinospermum virginianum HITCHCOCK, Fl. Ames 509 (1891).

Wats. and Coult., Gray's Man. 6 ed. 362; Upham, Fl. Minn. 108; Mac., Fl. Can. I, 336, 568; Britt., Fl. N. J. 177; Chap., Fl. S. St. 333; Webb., Fl. Neb. 135; Cov., Fl. Ark. 205; Gray, Syn. Fl. II, 1, 189 and Suppl. Syn. II, 421.

North America: N. Br., Q. to L. Superior reg. and Saskatchewan; S. to N. Eng., N. J., Va., La. and Alab.; W. to Minn., Neb. and Ark.

Minn. valley: Throughout; dry or sandy prairies or waste places.

HERB.: *Ballard 590*, Crystal lake, Scott Co.; *Ballard 399*, Jordan, Scott Co.; *Ballard 625*, Chaska; *Ballard 673*, Waconia; *Taylor 896*, Glenwood; *Sheldon 167*, Madison Lake; *Sheldon 841*, Sleepy Eye; *Kassube 190*, Minneapolis; *Holzinger 174*, Winona Co.; *Winchell 18*, Minneapolis; *Herb. Sheld. 1727*, Minneapolis.

Lappula deflexa (WAHL.) GARCKE, var. **americana** (GRAY). Proc. Am. Acad. XVII, 224 (1886).

Myosotis deflexa WAHL. Act. Holm. 113 (1810).

Echinospermum deflexum LEHM. Asper. 93 (1818) *in part.*

Wats. and Coult , Gray's Man. 6 ed. 363; Gray, Syn. Fl. II, 1, 189 and Suppl. II, 421; Mac., Fl. Can. I, 335, 567; Upham, Fl. Minn. 108; Hart., Fl. Scand. I, 81 (*spec.*); Webb., Appx. Neb. 38.

North America: Saskatchewan and Man. to Dak., Minn., Iowa and Neb.

Minn. valley: S. E. district and far N. W.; dry or waste places.

HERB.: *Taylor 425*, Janesville.

Lappula redowskii (HORNEM.) GREENE, var. **pilosum** (NUTT.)

Cynoglossum pilosum NUTT. Gen. I, 114 (1818).

Echinospermum patulum LEHM. Hook. Fl. Bor.-Am. II, 84 (1840).

E. strictum TORR. Mex. Bound. (1858) *not Ledeb.*

E. pilosum BUCKL. Proc. Phil. Acad. (1861).

E. redowskii var. *occidentale* WATSON, Bot. King Exp. 246 (1871).

Wats. and Coult., Gray's Man. 6 ed. 363; Mac., Fl. Can. I, 336; Coult., Fl. Colo. 259; Webb., Fl. Neb. 135?; Brew. and Wats., Fl. Calif. I, 529; Mac., Fl. Can. I,568; Led., Fl. Ross. III, 158 (*spec.*); Roth., Wheel. Exp. 202; Gray, Syn. Fl. II, 1, 189 and Suppl. Syn. II, 422; Coult., Fl. Tex. 285.

Species in N. Asia to Dahuria.

North America: Man. to Bear lake and along Sierras to Nev. and Tex.; E. to Minn. and Neb.; Alaska; Arizona.

Minn. valley: Forest district; probably W. to Cottonwood and Chippewa valleys; dry plains and waste places.

HERB.: *Ballard 168*, Shakopee; *Kassube 189*, Minneapolis.

CYNOGLOSSUM LINN. Gen. 100 (1737).

Baillon, *Hist. Pl.* X, 377; Benth. and Hook., *Gen. Pl.* II, 848; Durand, *Ind. Gen. Phan.* 282.

Living species: 70±; cosmopolitan; tropical mts. Russian Europe, 3; N. America, 6; Canada, 4; S. Sts., 1; E. Sts., 1; California, 3; Tex.-Mex., 3.

Cynoglossum virginicum LINN. Spec. 193 (1753).

C. amplexicaule MICHX. Fl. N. Am. I, 132 (1803).

Wats. and Coult., Gray's Man. 6 ed. 362; Britt., Fl. N. J. 176; Mac., Fl. Can. I, 335, 567; Chap., Fl. S. St. 333; Upham, Fl. Minn. 108; Cov., Fl. Ark. 205; Gray, Syn. Fl. II, 1, 188.

North America: N. Br., Q., Ont. to S. Man. and Rocky mts.?; S. to N. Eng., N. J., Fla.; W. to Minn., Ark. and La.

Minn. valley: N. and N. E. districts; rich, deep woods and edges of swamps.

HERB.: *Sandberg 449*, Cannon Falls.

XCIII. VERBENACEAE. Verbena Family.

Endlicher, *Gen. Pl.* 632 (1836-40); Endlicher, l. c. 639 (*Stilbineae*); Bentham and Hooker, *Gen. Plant.* II, 1131 (1876); Baillon, *Hist. Pl.* XI, 78 (1892).

Genera: 65±; tropical regions; a few in temperate N. and S. hemisphere; S. rather than N.

Species: 750–800; 1–2, fossil in Tertiary.

LEPTOSTACHYA MITCH. Act. Med. Cur. VIII, 212 (1748).

Phryma LINN. Diss. Chen. 1092 (1751).

Benth. and Hook., *Gen. Pl.* II, 1137; Durand, *Ind. Gen. Phan.* 319; O. Kuntze, *Rev. Gen.* II, 508; Baillon, *Hist. Pl.* XI, 82.

Living species: 1; Japan, E. Asia and N. America.

Leptostachya leptostachya (LINN.).

Phryma leptostachya LINN. Spec. 838 (1753).
Leptostachya carolinensis OK. Rev. Gen. II, 508 (1891).

Wats. and Coult., Gray's Man. 6 ed. 403; Britt., Fl. N. J. 194; Webb., Fl. Neb. 140; Upham, Fl. Minn. 103; Mac., Fl. Can. I, 378, 574; Chap., Fl. S. St. 310; Forbes and Hems., Fl. Sin. II, 251; Cov., Fl. Ark. 210; Gray, Syn. Fl. II, 1, 334.

Japan to N. India, E. Siberia and Manchuria.

North America: N. Br., Q., Ont. to Owen Sound and Minn.; S. to N. Eng., N. J. and Fla.; W. to Neb., Ark. and Miss.

Minn. valley: Throughout; not infrequent; woods and river banks or shores of lakes.

HERB.: *Ballard 890,* St. Bonifacius; *Ballard 771,* Swan lake, Carver Co.; *Taylor 821,* Glenwood; *Ballard 403,* Jordan, Scott Co.; *Ballard 540,* Cleary's lake, Scott Co.; *Sheldon 1095,* Springfield; *Ballard 425,* New Prague, Scott Co.; *Sheldon 565,* Waseca; *Sheldon 890,* Sleepy Eye; *Taylor 665,* Cobb river, Blue Earth Co.; *Oestlund 129,* Hennepin Co.; *Sandberg 421,* Cannon Falls; *Kassube 177,* Minneapolis; *Herb. Moyer 174, 175,* Chippewa river, near Montevideo.

VERBENA LINN. Gen. 834 (1737).

Glandularia GMEL. Syst. 920 (1807).
Billardiera MOENCH, Meth. 396 (1794).
Shuttleworthia MEISSN. Gen. 290 (1836).
Uwarowia BUNGE, Bull. Acad. Petr. VII, 278 (1840).

Benth. and Hook., *Gen. Pl.* II, 1146; Durand, *Ind. Gen. Phan.* 320; Baillon, *Hist. Pl.* XI, 96.

Living species: 80±; 1, almost cosmopolitan, the rest in tropical and extratropical America, principally North; also 1 in Mediterranean region and 1 in Australia. N. America, 15; S. Sts., 9; E. Sts., 7; Rocky Mts., 5; Canada, 4; California, 7-8; Pl. Wheel., 3; Pl. King, 2; W. Tex., 11.

Verbena bracteosa MICHX. Fl. N. Am. II, 13 (1803).

V. squarrosa ROTH, Cat. Bot. III, 3 (1806).
V. canescens CHAP. Fl. S. St. 370 (1860).

Wats. and Coult., Gray's Man. 6 ed. 402; Webb., Fl. Neb. 139; Upham, Fl. Minn. 103; Mac., Fl. Can. I, 379, 574; II, 349; Coult., Fl. Colo. 291; Brew. and Wats., Fl. Calif. I, 609; Roth., Wheel. Exp. 221, 371; Wats., King. Exp. 234; Cov., Fl. Ark. 210; Gray, Syn. Fl. II, 1, 366; Coult., Fl. Tex. 327;

North America: Ont., Saskatchewan to Brit. Col. and Oregon; S. to Calif., Arizona and Tex.; E. to Colo., Minn. and Ohio.

Minn. valley: Throughout; waste places or dry soil in fields or by roadsides.

HERB.: *Sheldon 1215,* New Ulm; *Ballard 745,* Waconia; *Ballard 239,* Jordan, Scott Co.; *Leonard 34,* Minneapolis; *Winchell 15,* Minneapolis; *Herrick 218,* Minneapolis; *Holzinger 159,* Winona Co.; *Kassube 176,* Minneapolis; *Oestlund 128,* Minneapolis. The two following are *V bracteosa* x *stricta?* (Upham); *Sheldon 1218,* New Ulm; *Upham 2,* Minneapolis.

Verbena stricta VENT. Hort. Cels. 53 (1800).

V. rigens MICHX. Fl. N. Am. II, 14 (1803).
V. cuneifolia RAF. Med. Repos. XI, 260? (1809).

Wats. and Coult., Gray's Man. 6 ed. 402; Britt., Fl. N. J. 194; Upham, Fl. Minn. 103; Webb., Fl. Neb. 139; Chap., Fl. Colo. 291; Cov., Fl. Ark. 211; Gray, Syn. Fl. II, 1, 336; Coult., Fl. Tex. 327.

North America: Minn., Dak. and Ohio to Neb., Ark., Tex. and N. Mex.

Minn. valley: Throughout; dry or sandy places on banks or hills.

HERB.: *Sheldon 1113,* Springfield; *Sandberg 420,* Goodhue Co.; *Herrick 217,* Minneapolis; *Oestlund 127,* Minneapolis; *Kassube 175,* Minneapolis; *Herb. Sheld. 1699,* Minneapolis; *Herb. Moyer 173,* Watson, Chippewa Co.

Verbena hastata LINN. Spec. 29 (1753).

V. paniculata LAM. Enc. Meth. I (1783).
V. hastata var. *pinnatifida* PURSH, Fl. Am. 416 (1814).

Wats. and Coult., Gray's Man. 6 ed. 402; Britt., Fl. N. J. 194; Webb., Fl. Neb. 139; Upham, Fl. Minn. 103; Coult., Fl. Colo. 291; Chap., Fl. S. St. 307; Brew. and Wats., Fl. Calif. I, 609; Mac., Fl. Can. I, 379; Roth., Wheel. Exp. 221; Wats., King. Exp. 234; Cov , Fl. Ark. 210; Gray, Syn. Fl. II, 1, 336; Coult., Fl. Tex. 327.

North America: Q., Ont. to N. Eng., N. J. and Fla.; W. to Minn., Ark., Tex., N. Mex. and Miss. Sacramento valley, Calif.

Minn. valley: Throughout; prairies, banks, barren places and forest openings; common.

HERB.: *Taylor 776*, Glenwood; *Ballard 726*, Benton, Carver Co.; *Taylor 515*, Mud lake, Waseca Co.; *Sheldon 48*, Elysian; *Taylor 648*, Minnesota lake; *Sheldon 776*, Sleepy Eye; *Holzinger 158*, Winona Co.; *Kassube 173*, Minneapolis; *Oestlund 125*, Minneapolis; *Leonard 33*, Minneapolis; *Herrick 215*, Minneapolis; *Sandberg 418*, Goodhue Co.; *Herb. Sheld. 1734*, Minneapolis; *Herb. Moyer 171*, Chippewa river, near Montevideo.

Verbena angustifolia MICHX. Fl. N. Am. II, 13 (1803).

V. rugosa WILLD. Enum. 633 (1809).
V. simplex LEHM. Pugill. I, 37 (1828).

Wats. and Coult., Gray's Man. 6 ed. 402; Britt , Fl. N. J. 194; Upham, Fl. Minn. 103; Chap., Fl. S. St. 307; Mac., Fl. Can. I, 379; Cov., Fl. Ark. 210; Gray, Syn. Fl. II, 1, 336.

North America: Q. and Ont. to Mass., N. J. and Fla.; W. to Minn. and Ark.

Minn. valley: N. E. district; rare; dry soil or shaded banks.

HERB.: *Ballard 212*, Jordan, Scott Co.

Verbena urticaefolia LINN. Spec. 29 (1753).

Wats. and Coult., Gray's Man. 6 ed. 402; Britt., Fl. N. J. 194; Webb., Fl. Neb. 139; Upham, Fl. Minn. 103; Chap., Fl. S. St. 307; Mac., Fl. Can. I, 378; Brew. and Wats., Fl. Calif. I, 608; Cov., Fl. Ark. 211; Gray, Syn. Fl. II, 1, 335; Coult., Fl. Tex. 327.

North America: N. B., Q., Ont. to Owen Sound; S. to N. Eng. and Fla.; W. to Ark., Tex. and California; S. in Mexico and C. America.

Minn. valley: Throughout; common; banks of streams or lakes, woods and thickets.

HERB.: *Sheldon 840*, Sleepy Eye; *Sheldon 1575*, Lake Benton; *Sheldon 1091*, Springfield; *Ballard 530*, Cleary's lake, Scott Co.; *Ballard 667*, Waconia; *Taylor 809*, Glenwood; *Kassube 174*, Minneapolis; *Herrick 216*, Minneapolis; *Oestlund 126*, Minneapolis; *Sandberg 419*, Goodhue Co.; *Herb. Sheld. 1650*, Minneapolis; *Herb. Moyer 172*, Montevideo.

XCIV. LABIATAE. Mint Family.

Endlicher, *Gen. Pl.* 607 (1836–40); Lindl. *Veg. King.* 659 (1846)—*Lamiaceae;* Bentham and Hooker, *Gen. Plant.* II, 1160 (1876); Baillon, *Hist. Pl.* XI, 1 (1892).

Genera: 150±; cosmopolitan; 129 (*Baillon*).

Species: 3000±; particularly abundant in the Orient; 2–3 fossil in Recent rocks.

STACHYS LINN. Gen. 485 (1737).

Betonica LINN. Gen. 476 (1737).
Galeopsis MOENCH, Meth. 397 (1794).
Zietinia GLEDIT. Syst. 184 (1765).
Trixago MOENCH, l. c. 398 (1794).
Tetrahitum HOFFM. and LINK, Fl. Port. 103 (1809).
Eriostomum H. and L. l. c. 105 (1809).

Benth. and Hook., *Gen. Pl.* II, 1208; Durand, *Ind. Gen. Phan.* 328; Schenck, *Palaeophyt.* 778; Baillon, *Hist. Pl.* XI, 4.

Living species: 200 described; 175 reduced. Cosmopolitan; in tropical mts. Europe, 50; Russia, 20; Russian Europe, 6; North America, 16; S. Sts., 4; Rocky mts., 1; E. Sts., 4; California, 7; Pl. Wheel., 6; several Tex. and Mex. region; W. Tex., 4.

Fossil species: Interglacial at Mundesley, *S. palustris* Linn. (*Schenck.*).

Stachys aspera MICHX. Fl. N. Am. II, 4 (1803).

S. arvensis WALT. Fl. Car. 162 (1788) *not Linn.*
S. hispida PURSH, Fl. Am. II, 407 (1814).
S. palustris var. *aspera* GRAY, Man. 5 ed. 358 (1867).

Wats. and Coult., Gray's Man. 6 ed. 422; Britt., Fl. N. J. 201; Upham, Fl. Minn. 106; Webb., Fl. Neb. 138; Chap., Fl. S. St. 326; Mac., Fl. Can. I, 391; Forbes and Hems., Fl. Sin. II, 301; Led., Fl. Ross. III, 214; Miyabe, Fl. Kur. 256 in var.; Cov., Fl. Ark. 213; Gray, Syn. Fl. II, 1, 387.

Japan, Corea, Saghalin, Kuriles, Kamtk.

North America: W. Ont. to N. Eng., N. J. and S. Car.; W. to Minn., Neb. and Ark. Mexico?, Oregon?.

Minn. valley: Forest district to Blue Earth Co.; infrequent; wet ground.

HERB.: *Holzinger 169*, Winona Co.; *Holzinger 170*, Winona; *Bailey 14*, Vermilion lake; *Kassube 184*, Minneapolis.

Stachys palustris LINN. Spec. 580 (1753).

Wats. and Coult., Gray's Man. 6 ed. 422; Britt., Fl. N. J. 201; Mac., Fl. Can. I, 390; Upham, Fl. Minn. 106; Coult., Fl. Colo. 299; Brew. and Wats., Fl. Calif. I, 606; Led., Fl. Ross. III, 414; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 325; Wats., King Exp. 237; Roth., Wheel. Exp. 224; Gray, Syn. Fl. II, 1, 387 and Suppl. Syn. II, 462; Hart., Fl. Scand. I, 90.

N. Europe to Caucasus mts.; Ural and Altai Siberia to the Himalayas.

North America: Newf. to Pac. and Oregon; N. to Ft. Franklin on the Mackenzie; S. to N. Eng. and N. J.; W. across Cont.; S. in Rocky mts. to Mexico.

Minn. valley: Throughout; common; edges of marshes.

HERB.: *Ballard 365*, Helena, Scott Co.; *Taylor 582*, Minnesota lake; *Taylor 475*, Janesville; *Taylor 855*, Glenwood;

Sheldon 864, Sleepy Eye; *Sheldon 1122*, Springfield; *Sheldon 362*, Madison Lake; *Sheldon 762*, Sleepy Eye; *Sheldon 642*, Waseca; *Leonard 37*, Minneapolis; *Holzinger 168*, Farmington; *Sandberg 441*, Goodhue Co.; *Sandberg 442*, Cannon Falls; *Roberts 108*, Spring Valley; *Herb. Moyer 188*, Montevideo.

PHYSOSTEGIA BENTH. Bot. Reg. t. 1289 (1836).

Benth. and Hook., *Gen. Pl.* II, 1204; Durand, *Ind. Gen. Phan.* 327; Baillon, *Hist. Pl.* XI, 45.

Living species: 3; N. America. Rocky mts., 1; S. Sts., 2; Canada, 2; E. Sts., 2; W. Tex., 2.

Physostegia virginiana (LINN.) BENTH. Bot. Reg. 1289 (1836).

Dracocephalum virginianum LINN. Spec. 594 (1753).
Prasium purpureum and *concinneum* WALT. Fl. Car. 166 (1788).
Dracocephalum lancifolium MOENCH, Meth. 410 (1794).
D. variegatum VENT. Hort. Cels. 44 (1800).

Wats. and Coult., Gray's Man. 6 ed. 419; Britt., Fl. N. J. 201; Mac., Fl. Can. I, 389; Upham, Fl. Minn. 105; Chap., Fl. S. St. 325; Cov., Fl. Ark. 213; Gray, Syn. Fl. II, 1, 383; Coult., Fl. Tex. 342.

North America: Q., Ont., Man. to 49° N. lat., Minn. and Dak.; S. to N. Y., N. J. and Fla.; W. to Miss., Ark. and Tex.

Minn. valley: S. and W. districts and N. E.; probably throughout; wet banks and edges of swamps.

HERB.: *Sheldon 1253*, Lake Benton; *Herrick 230*, Minneapolis; *Holzinger 164*, Winona Co.; *Oestlund 139*, Minneapolis; *Sandberg 434*, Goodhue Co.; *Herb. Moyer 187*, Montevideo.

BRUNELLA LINN. Gen. 177 (1737).

Prunella LINN. Gen. later eds. (1767 etc.).

Benth. and Hook., *Gen. Pl.* II, 1203; Durand, *Ind. Gen. Phan.* 327; Baillon, *Hist. Pl.* XI, 43.

Living species: 2–3; cosmopolitan; in tropical mts. N. America, 1.

Brunella vulgaris LINN. Spec. 837 (1753).

Wats. and Coult., Gray's Man. 6 ed. 419; Britt., Fl. N. J. 201; Upham, Fl. Minn. 105; Webb., Fl. Neb. 138; Chap., Fl. S. St. 322; Mac., Fl. Can. I, 388; Brew. and Wats., Fl. Calif. I, 604; Forbes and Hems., Fl. Sin. II, 299; Led., Fl. Ross. III, 392; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 323; Miyabe, Fl. Kur. 255; Wats., Fl. Calif. II, 477; Roth., Wheel. Exp. 223; Wats., King Exp. 236; Cov., Fl. Ark. 212; Gray, Syn. Fl. II, 1, 382; Hart., Fl. Scand. I, 87.

N. Africa; Australia; Europe to Baikal Sib., Kuriles and China; Andes mts., S. America.

North America: Atl. to Pac. and Alaska; S. to Yosemite valley; S. to Neb., Minn., Ark., N. J., Fla., Tex. and Mexican mts.

Minn. valley: Forest district; infrequent; woods and thickets.

HERB.: *Ballard 364,* Helena, Scott Co.; *Bailey 188,* Vermilion lake; *Oestlund 140,* Hennepin Co.; *Roberts 106,* Duluth; *Sandberg 435,* Goodhue Co.; *Sheldon 1627,* Taylor's Falls.

SCUTELLARIA LINN. Gen. 493 (1737).

Cassida MOENCH, Meth. 413 (1794).

Benth. and Hook., *Gen. Pl.* II, 1201; Durand, *Ind. Gen. Phan.* 327; Baillon, *Hist. Pl.* XI, 42.

Living species: 100±; cosmopolitan; in tropical mts. Europe, 11; Russia, 15; European Russia, 4; North America, 23; S. Sts., 13; Rocky mts., 3; Canada, 5; E. Sts., 11; California, 7–8; Pl. Wheel., 3; Pl. King, 2; W. Tex., 8.

Scutellaria parvula MICHX. Fl. N. Am. II, 12 (1803).

S. ambigua NUTT. Gen. II, 37 (1818).

Wats. and Coult., Gray's Man. 6 ed. 418; Webb., Fl. Neb. 138; Chap., Fl. S. St. 324; Mac., Fl. Can. I, 388; Upham, Fl. Minn. 105; Gray, Syn. Fl. II, 380; Mac., Fl Can. I, 574; Cov., Fl. Ark. 212; Coult., Fl. Tex. 342.

North America: Q., N. S., Ont. to Georgian bay and Saskatchewan; S. to N. Eng. and Fla.; W. to Minn., Neb., Ark. and Tex.

Minn. valley: Throughout; frequent; dry banks and edges of thickets.

HERB.: *Sheldon 1345,* Verdi, Lincoln Co.; *Sheldon 1050,* Iberia, Brown Co.; *Sheldon 1540,* Lake Benton; *Sheldon 953,* Redwood Falls; *Sheldon 1066,* Springfield; *Taylor 181,* Janesville; *Sandberg 436, Sandberg 437,* Goodhue Co.; *Holzinger 165,* Winona Co.; *Kassube 182,* Minneapolis; *Herb. Sheld. 1767,* Ft. Snelling.

Scutellaria galericulata LINN. Spec. 599 (1753).

Wats. and Coult., Gray's Man. 6 ed. 418; Britt., Fl. N. J. 201; Upham, Fl. Minn. 106; Mac., Fl. Can. I, 388; Coult., Fl. Colo. 298; Brew. and Wats., Fl. Calif. I, 603; Chap., Fl. S. St. 324; Forbes and Hems., Fl. Sin. II, 294; Led., Fl. Ross. III, 398; Hook., Fl. Gt. Brit. 324; Nym., Fl. Eur.; Miyabe, Fl. Kur.; Herd., Fl. Eur. Russ. 102; Roth., Wheel. Exp. 223; Wats., King Exp. 237; Gray, Syn. Fl. II, 381; Hart., Fl. Scand. I, 86; Webb., Appx. Neb. 39.

W. Europe to Japan, Kamtk., China and Kuriles to Saghalin; N. Africa; Manchuria.

North America: Newf., Anticosti to Pac. and Ft.

Franklin on Mackenzie; S. to N. Eng., N. J. and N. Car.; W. to Mont., Colo. and Arizona.

Minn. valley: Throughout; common; wet places in woods and along banks.

HERB.: *Ballard 730*, Benton, Carver Co.; *Ballard 793*, Goose lake, Carver Co.; *Ballard 665*, Waconia; *Ballard 438*, Prior's lake, Scott Co.; *Taylor 377*, Janesville; *Sheldon 1086*, Springfield; *Taylor 608*, Minnesota lake; *Sheldon 554*, Waseca; *Sheldon 715*, Sleepy Eye; *Taylor 1055*, Glenwood; *Ballard 586*, Rice lake, Scott Co.; *Holzinger 166*, Winona Co.; *Herrick 231* Minneapolis; *Sandberg 438*, Chisago Co.; *Roberts 107*, Little Marais; *Bailey 76*, Vermilion lake; *Herrick 232*, Minneapolis; *Oestlund 141*, Minneapolis; *Kassube 183*, Minneapolis; *Sheldon 1256*, Lake Benton.

Scutellaria lateriflora LINN. Spec. 598 (1753).

Wats. and Coult., Gray's Man. 6 ed. 418; Britt., Fl. N. J. 201; Webb., Fl. Neb. 138; Mac., Fl. Can I, 338; Coult., Fl. Colo. 298; Upham, Fl. Minn. 106; Chap., Fl. S. St. 324; Brew. and Wats., Fl. Calif. I, 602; Cov., Fl. Ark. 212; Gray, Syn. Fl. II, 1, 378.

North America: Newf., Anticosti, N. S. to Pac. and Oregon; N. to Athabasca; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Ark., Miss., N. Mex. and Rockies.

Minn. valley: Throughout; common; wet, shaded banks.

HERB.: *Ballard 710*, Waconia; *Sheldon 1212*, New Ulm; *Taylor 904*, Glenwood; *Ballard 820*, Page lake, Carver Co.; *Taylor 976*, Glenwood; *Sheldon 1037*, Sleepy Eye; *Sandberg 439*, Goodhue Co.; *Holzinger 167*, Winona Co.; *Oestlund 142*, Minneapolis; *Herrick 233*, Minneapolis; *Bailey 52*, Vermilion lake; *Sandberg 440*, Cannon Falls; *Herb. Sheld. 1672*, Minneapolis.

DRACOCEPHALUM LINN. Gen. 481 (1737).

Moldavica MOENCH, Meth. 410 (1794).

Ruyschiana MILL. Dict. (1768).

Benth. and Hook., *Gen. Pl.* II, 1199; Durand, *Ind. Gen. Phan.* 326; Baillon, *Hist. Pl.* XI, 10 (*sub Nepeta*).

Living species: 30; Asia, 18; Europe, 4; N. America, 1.

Dracocephalum parviflorum NUTT. Gen. II, 35 (1818).

Wats. and Coult., Gray's Man. 6 ed. 416; Upham, Fl. Minn. 105; Coult., Fl. Colo. 298; Mac., Fl. Can. I, 387; Gray, Syn. Fl. II, 1, 378; Roth., Wheel. Exp. 223; Wats., King Exp. 236.

North America: Ont. to Pac., Ft. Franklin on the Mackenzie and Yukon river, Alaska; E. to N. Y.; S. to Minn. and Iowa; S. in Rockies to N. Mex.

Minn. valley: N. E. district and probably N. W.; dry places in woods or on gravelly banks.

HERB.: *Sandberg 432*, Tower; *Herrick 228*, Minneapolis; *Herrick 229*, Minneapolis; *Bailey 53*, Vermilion lake; *Sandberg 433*, Cannon Falls.

VLECKIA RAF. Med. Rep. II, V, 352 (1808).

Lophanthus BENTH. Bot. Reg. 1282 (1829) *not Adans.*

Benth. and Hook., *Gen. Pl.* II, 1198; Durand, *Ind. Gen. Phan.* 326; O. Kuntze, *Rev. Gen.* II, 511 (*sub Agastache*); Baillon, *Hist. Pl.* XI, 47.

Living species: 6; N. America and E. Asia; extratropical. N. America, 4; S. Sts., 2; Canada, 3; E. Sts., 3; Rocky mts., 2; Pac. coast, 1; Pl. King, 2; Pl. Wheel , 1; W. Tex., 1.

Vleckia foenicula (PURSH) RAF. N. Fl. (1836).

Stachys foeniculum PURSH, Fl. 407 (1814).
Hyssopus anisatus NUTT. Gen. II, 27 (1818).
H. discolor DESF. Cat. Par. (1829).
Lophanthus anisatus BENTH. Bot. Reg. 1282 (1829).

Wats. and Coult. Gray's Man. 6 ed. 415; Webb., Fl. Neb. 138; Coult., Fl. Colo. 298; Upham, Fl. Minn. 105; Mac., Fl. Can. I, 386; Brew. and Wats., Fl. Calif. I, 602; Wats., King. Exp. 236; Gray, Syn. Fl. II, 1, 376.

North America: Man., Athabasca, Saskatchewan to Ft. Franklin on Mackenzie; W. to Rockies; S. to Neb., Dak., Minn. and Wisc.

Minn. valley: Throughout; common; prairies and thickets.

HERB.: *Ballard 453*, Scott Co.; *Taylor 774*, Glenwood; *Ballard 791*, Swan Lake, Carver Co.; *Sheldon 33*, Sleepy Eye; *Herrick 227*, Minneapolis; *Bailey 10a*, Elk River; *Oestlund 138*, Minneapolis; *Watson 1*, Farmington; *Leonard 36*, Minneapolis; *Bailey 49*, Vermilion lake; *Kassube 181*, Minneapolis; *Sandberg 431*, Cannon Falls; *MacM.* and *Sheld. 37*, Brainerd; *Herb. Sheld. 1644*, Minneapolis; *Herb. Wickersheim 97*, Idlewild, Lincoln Co.; *Herb. Moyer 186*, Chippewa river, near Montevideo.

Vleckia scrophulariaefolia (WILLD.) RAF. N. Fl. (1836).

Hyssopus scrophulariaefolius WILLD. Spec. III, 48 (1800).
Lophanthus scrophulariaefolius BENTH. Bot. Reg. 1282 (1829).

Wats. and Coult., Gray's Man. 6 ed. 415; Britt., Fl. N. J. 200; Upham, Fl. Minn. 105; Chap., Fl. S. St. 321; Mac., Fl. Can. I, 386; Cov., Fl. Ark. 212; Gray, Syn. Fl. II, 1, 376.

North America: Ont. to Vt.; S. to N. J. and Ga.; W. to Minn., Neb., Ark. and Tex.

Minn. valley: Throughout; infrequent; borders of woods or thickets.

Herb.: *Sheldon 1319,* Lake Benton; *Ballard 713,* Waconia; *Sandberg 430,* Vasa.

Vleckia nepetoides (Linn.) Raf. N. Fl. (1836).

Hyssopus nepetoides Linn. Spec. 579 (1753).
Lophanthus nepetoides Benth. Bot. Reg. 1282 (1829).

Wats. and Coult., Gray's Man. 6 ed. 415; Britt., Fl. N. J. 200; Upham, Fl. Minn. 105; Webb., Fl. Neb. 138; Chap., Fl. S. St 321; Mac., Fl. Can. I, 386; Cov., Fl. Ark. 212; Gray, Syn. Fl. II, 1, 376; Coult., Fl. Tex. 340.

North America: Q., Ont. to Vt.; S. to N. Car.; W. to Minn., Neb., Ark. and Tex.

Minn. valley: W. district; infrequent; edges of woods or thickets.

Herb.: *Wickersheim 96,* Lake Park, Becker Co.

MONARDA Linn. Gen. 17 (1737).

Cheilyctis Raf. Journ. Phys. LXXXIX, 99 (1819).
Coryanthus Nutt. Trans. Am. Phil. Soc. V, 186 (1838).

Benth. and Hook., *Gen. Pl.* II, 1197; Durand, *Ind. Gen. Phan.* 326; Baillon, *Hist. Pl.* XI, 61.

Living species: 9; N. America. E. Sts., 6; Canada, 4; Rocky mts., 3; S. Sts., 4; Pl. Wheel., 2; W. Tex., 4.

Monarda punctata Linn. Spec. 22 (1753).

M. lutea Michx. Fl. N. Am. I, 16 (1803).

Wats. and Coult., Gray's Man. 6 ed. 414; Britt., Fl. N. J. 199; Upham, Fl. Minn., 105; Mac., Fl. Can. I, 386; Coult., Fl. Colo. 297; Chap., Fl. S. St. 320; Cov., Fl. Ark. 212; Gray, Syn. Fl. II, 1, 375; Coult., Fl. Tex. 339.

North America: Ont.? to N. Y. and N. J.; S. to Fla. and Miss.; W. to Minn., Dak., Colo. and Tex.

Minn. valley: Central and S. central districts; infrequent; banks and thickets.

Herb.: *Scott 1,* Beaver.

Monarda fistulosa Linn. Spec. 22 (1753).

M. oblongata Ait. Hort. Kew. I, 36 (1789).
M. longifolia Lam. Enc. Meth. IV, 256 (1797).
M. allophylla Michx. Fl. N. Am. II, 16 (1803).
M. involucrata Wend. Ind. Sem. Marb. (1807).
M. varians Bart. Prodr. Penn. I, 34 (1815).

Wats. and Coult., Gray's Man. 6 ed. 414; Britt., Fl. N. J. 199; Upham, Fl. Minn. 104; Webb., Fl. Neb. 139; Mac., Fl. Can. I, 385; Coult., Fl. Colo. 297; Chap., Fl. S. St. 320; Roth., Wheel. Exp. 222; Cov., Fl. Ark. 212; Gray, Syn. Fl. II, 1, 374; Coult., Fl. Tex. 339.

North America: St. Lawrence river to Brit. Col.; S. to N. Eng., N. J. and Fla.; W. to Dak., Neb. and Tex.

Minn. valley: Throughout; common; borders of woods and thickets.

HERB.: *Sheldon 1185,* New Ulm; *Taylor 772,* Glenwood; *Ballard 871,* Waconia; *Sheldon 1334,* Lake Benton; *Ballard 617,* Chaska; *Ballard 573,* Prior's lake, Scott Co.; *Kassube 180,* Minneapolis; *Oestlund 137,* Hennepin Co.; *Winchell 17,* Minneapolis; *Leonard 35,* Minneapolis; *Sandberg 429,* Cannon Falls, var. *mollis* Benth.; *Taylor 880,* Glenwood; *Herb. Sheld. 1665,* Minneapolis; *Herb. Moyer 184, 185,* Chippewa river, near Montevideo.

HEDEOMA PERS. Syn. II, 131 (1807).

Benth. and Hook., *Gen. Pl.* II, 1188; Durand, *Ind. Gen. Phan.* 325; Baillon, *Hist. Pl.* XI, 56.

Living species: 12; N. and S. America; N. America, 10; Canada, 2; S. Sts., 2; E. Sts., 3; Pl. Wheel., 2; several in Texas and Mexico; W. Tex., 6.

Hedeoma hispida PURSH, Fl. Am. 414 (1814).

H. hirta NUTT. Gen. I, 16 (1818).
Cunila hispida SPRENG. Syst. I, 54 (1825).

Wats. and Coult., Gray's Man. 6 ed. 412; Webb., Fl. Neb. 139; Mac., Fl. Can. I, 385; Upham, Fl. Minn. 104; Coult., Fl. Colo. 296; Cov., Fl. Ark. 211; Gray, Syn. Fl. II, 1, 362.

North America: Ont. to Saskatchewan; S. to Dak., Neb., Minn., Ill., Ark. and La.

Minn. valley: Throughout; dry knolls and headlands or ledges of rock.

HERB.: *Sheldon 1449,* Pipestone; *Sheldon 819,* Sleepy Eye; *Oestlund 136,* Minneapolis; *Sandberg 428,* Cannon Falls; *Herrick 226,* Minneapolis; *Kassube 179,* Minneapolis; *Herb. Moyer 183,* Montevideo.

ACINOS MOENCH, Meth. 407 (1794).

Calamintha MOENCH, l. c. 408 (1794).
Clinopodium LINN. em. Benth. l. c. 1191 (1876).

Benth. and Hook., *Gen. Pl.* II, 1190; Durand, *Ind. Gen. Phan.* 325; O. Kuntze, *Rev. Gen.* 513; Baillon, *Hist. Pl.* XI, 55.

Living species: 40; temperate N. hemisphere; Russia, 17; Europe, 9; Russian Europe, 3; S. Sts., 6; Rocky mts., 1; Canada, 2; E. Sts., 3; California, 2; W. Tex., 1.

Acinos vulgaris (LINN.).

Clinopodium vulgare LINN. Spec. 821 (1753).
Calamintha clinopodium SPENN. Fl. Frib. III (1829).

Wats. and Coult., Gray's Man. 6 ed. 412; Britt., Fl. N. J. 198; Upham, Fl. Minn. 104; Mac., Fl. Can. I, 384; Coult., Fl. Colo. 296; Herd., Fl. Eur. Russ. 102; Cov., Fl. Ark. 211; Forbes and Hems., Fl. Sin. II, 283 (closely related spec.); Gray, Syn. Fl. II, 1, 360; Hart., Fl. Scand. I, 86.

Northern Europe to Asia, Corea? Formosa? Japan? Manchuria?

North America: Ont. to Rocky mts.; S. to Gt. Lakes; introduced from W. Europe further E. in U. S.

Minn. valley: Reported from N. edge; rare or doubtful; borders of woods and fields.

HERB.: *Bailey 59*, Vermilion lake.

KOELLIA MOENCH, Meth. 407 (1794).

Pycnanthemum MICHX. Fl. N. Am. II, 7 (1803).
Brachystemum MICHX. l. c. 5 (1803).
Tullia LEAVENW. Sill. Journ. XX, 343 (1831).

Benth. and Hook., *Gen. Pl.* II, 1184; Durand, *Ind. Gen. Phan.* 325; O. Kuntze, *Rev. Gen.* 520; Baillon, *Hist. Pl.* XI, 51.

Living species: 17; N. America. California, 1; rest E. and S. S. Sts., 10; E. Sts., 10; Canada, 4; Rocky mts., 1; W. Tex., 2; 13 (Gray Syn. Fl.) N. America.

Koellia flexuosa (WALT.).

Nepeta flexuosa WALT. Fl. Car. (1788).
? *Koellia capitata* MOENCH, Meth. (1794).
Brachystemum lanceolatum WILLD. Enum. 623 (1809) *in part.*
Pycnanthemum linifolium PURSH, Fl. Am. 409 (1814).
P. flexuosum B. S. P. Cat. N. Y. (1888).

Wats. and Coult., Gray's Man. 6 ed. 410; Upham, Fl. Minn. 104; Britt., Fl. N. J. 198; Chap., Fl. S. St. 315; Mac., Fl. Can. I, 574; Cov., Fl. Ark. 211; Gray, Syn. Fl. II, 1, 354; Coult., Fl. Tex. 334.

North America: Ont. to Mass. and Minn.; S. to N. J., Fla., Ark. and Tex.

Minn. valley: Reported from S. central district; dry woods or thickets.

Koellia virginiana (LINN.) OK. Rev. Gen. II, 520 (1891).

Satureja virginiana LINN. Spec. 567 (1753).
Thymus virginicus LINN. Mant. 409 (1767).
? *Koellia capitata* MOENCH, Meth. (1794).
Nepeta virginica WILLD. Spec. III, 56 (1800).
Pycnanthemum virginicum PERS. Syn. II, 128 (1807).
Brachystemum lanceolatum WILLD. Enum. 623 (1809) *in part.*
Pycnanthemum lanceolatum PURSH, Fl. Am. 409 (1814).
P. virginianum HITCHCOCK, Fl. Ames. 512 (1891).

Wats. and Coult., Gray's Man. 6 ed. 409; Britt., Fl. N. J. 198; Webb., Fl. Neb. 139; Chap., Fl. S. St. 315; Mac., Fl. Can. I, 382; Coult., Fl. Colo. 295; Gray, Syn. Fl. II, 1, 354; Cov., Fl. Ark. 211.

North America: Q., Ont., N. Eng. to N. J. and Ga.; W. to Minn., Dak., Neb. and Ark.

Minn. valley: Throughout; edges of woods or thickets.

HERB.: *Ballard 626*, Chaska; *Taylor 474*, Janesville; *Sheldon 772*, Sleepy Eye; *Taylor 782*, Glenwood; *Winchell 16*, Cedar lake. Hennepin Co.; *Oestlund 135*, Minneapolis; *Sandberg 427*, Goodhue Co.; *Herb. Sheld. 1661*, Minneapolis; *Herb. Moyer 182*, Montevideo.

LYCOPUS LINN. Gen. 19 (1737).

Benth. and Hook., *Gen. Pl.* II, 1183; Durand, *Ind. Gen. Phan.* 324; Schenck, *Palaeophyt.* 778; Baillon, *Hist. Pl.* XI, 49.

Living species: 10 described; perhaps only 2–3 distinct; temperate regions of old world and N. America. Europe, 2; Russia, 3; N. America, 5; E. Sts., 5; Rocky mts., 3; California, 2; Canada, 3; S. Sts., 3; Pl. Wheel., 2; Pl. King, 1; W. Tex., 1.

Fossil species: Interglacial at Beeston, *L. europaeus* Linn. (*Schenck*).

Lycopus sinuatus ELL. Sk. I, 187 (1821).

L. europaeus WALT. Fl. Car. (1788).
L. vulgaris and *angustifolius* NUTT. Gen. II, (1818).
L. europaeus var. *sinuatus* GRAY, Man. 5 ed. 346 (1867).

Wats. and Coult., Gray's Man. 6 ed. 408; Britt., Fl. N. J. 196; Brew. and Wats., Fl. Calif. I, 592; Coult., Fl. Colo. 295; Mac., Fl. Can. I, 382; Webb., Fl. Neb. 139; Chap , Fl. S. St. 313; Upham, Fl. Minn. 104; Roth., Wheel. Exp. 221; Wats., King. Exp. 234; Cov., Fl. Ark. 211; Gray, Syn. Fl. II, 1, 353; Coult., Fl. Tex. 334.

North America: Atl. to Pac. in Can.; N. to Peace river; S. to Oregon and Calif. and throughout E. U. S. to Fla. and Tex.

Minn. valley: Throughout; wet places along streams and in woods.

HERB.: *Ballard 687*, Waconia; *Ballard 785*, Swan lake, Carver Co.; *Sheldon 897*, Sleepy Eye; *Sheldon 1543*, Lake Benton; *Ballard 720*, Benton, Carver Co.; *Roberts 105*, Baptism river; *Oestlund 104*, Minneapolis; *Sandberg 426*, Cannon Falls; *Holzinger 163*, Winona Co.; *Herrick 225*, Minneapolis; *Herb. Sheld. 1660*, Minneapolis; *Herb. Wickersheim 95*, Idlewild, Lincoln Co.; *Herb. Moyer 181*, Montevideo.

Lycopus lucidus TURCZ. var. **obtusifolius** (BENTH).

L. obtusifolius BENTH. DC. Prodr. XII, 177 (1848).
L. lucidus var. *americanus* GRAY, Proc Am. Acad. VIII, 286 (1870).

Wats. and Coult., Gray's Man. 6 ed. 408; Webb., Fl. Neb. 139; Upham, Fl. Minn. 104; Mac., Fl. Can. I, 382; Coult., Fl. Colo. 205; Brew. and Wats., Fl. Calif. I, 592; Forbes and Hems., Fl. Sin. II, 282 (spec.); Roth., Wheel. Exp. 221; Gray, Syn. Fl. II, 1, 353.

Species ranges in Japan, Siberia and Manchuria to China proper.

North America: Hudson Bay and Saskatchewan to Calif., Arizona, N. Mex., Ark. and Neb.

Minn. valley: N. W. to W. and S. central district; wet places.

HERB: *Taylor 1054,* Glenwood; *Sheldon 1544,* Lake Benton; *Taylor 1008,* Glenwood.

Lycopus rubellus MOENCH, Meth. Suppl. 446 (1802).

L. angustifolius NUTT. Gen. I, 15 (1818).

L. europaeus var. *integrifolius* GRAY, Man. 5 ed. (1867).

Wats. and Coult., Gray's Man. 6 ed. 408; Britt., Fl. N. J. 196; Upham, Fl. Minn. 104; Cov., Fl. Ark. 211; Gray, Syn. Fl. II, 1, 353.

North America: N. J. to Minn.; S. to Ga. and Tenn.; W. to La. and Ark.

Minn. valley: N. E. district; rare; wet places in woods or along banks.

Lycopus virginicus LINN. Spec. 21 (1753).

L. uniflorus MICHX. Fl. N. Am. I, 14 (1803).

L. pumilus VAHL, Enum. (1806).

Wats. and Coult., Gray's Man. 6 ed. 408; Britt., Fl. N. J. 196; Coult., Fl. Colo. 294; Upham, Fl. Minn. 104; Webb., Fl. Neb. 139; Mac., Fl. Can. I, 382; Chap., Fl. S. St. 313; Brew. and Wats., Fl. Calif. I, 592; Cov., Fl. Ark. 211; Gray, Syn. Fl. II, 1, 353.

North America: Labrador across Can. in forest reg. to Oregon and Brit. Col.; S. to Neb., Ark., Mo. and Fla.

Minn. valley: Forest district, particularly N. E.; wet places in woods or along streams.

HERB.: *Ballard 796,* Goose lake, Carver Co.; *Roberts 102,* Grand Marais; *Oestlund 133,* Hennepin Co.; *Roberts 103,* Knife river; *Roberts 104,* Baptism river; *Sandberg 425,* Cannon Falls; *Herb. Moyer 261,* Montevideo.

MENTHA LINN. Gen. 478 (1737).

Menthella PERARD, ex Durand l. c. (1888).

Pulegium MILL, Dict. No. 8 (1768).

Audibertia BENTH. Bot. Reg. 1282 (1829).

Benth. and Hook., *Gen. Pl.* II, 1182; Durand, *Ind. Gen. Phan.* 324; Baillon, *Hist. Pl.* XI, 48.

Living species: 300±, described; perhaps only 20–25 distinct. All temperate and tropical regions. Russia, 9; Europe, 13; Russian Europe, 7; N. America, 1 end.

Mentha canadensis LINN. Spec. 577 (1753).

Wats. and Coult., Gray's Man. 6 ed. 408; Britt., Fl. N. J. 196; Coult., Fl. Colo. 294; Upham, Fl. Minn. 104; Webb., Fl. Neb. 139; Brew. and

Wats., Fl. Calif. I, 591; Mac., Fl. Can. I, 381; Roth., Wheel. Exp. 221, 372; Wats., King. Exp. 234; Cov., Fl. Ark. 211; Gray, Syn. Fl. II, 1, 352.

A very close species (*M. arvensis*) in China, W. Eur. and Java.

North America: Puget Sound to Mackenzie reg. and Atl. coast in Can.; S. throughout continent; rarer southward.

Minn valley: Throughout; common; wet places in woods or along streams.

HERB.: *Ballard 719*, Benton, Carver Co.; *Ballard 505*, Prior's lake, Scott Co.; *Taylor 167a*, Janesville; *Ballard 615*, Chaska; *Sheldon 1296*, Lake Benton; *Ballard 669*, Waconia; *Ballard 819*, Page lake, Carver Co.; *Taylor 1004*, Glenwood; *Ballard 777*, Swan lake, Carver Co.; *Sheldon 865*, Sleepy Eye; *Sheldon 1084*, Springfield; *Sheldon 179*, Eagle lake, Blue Earth Co.; *Sheldon 21*, Elysian; *Taylor 677*, Minnesota lake; *Sheldon 751*, Sleepy Eye; *Herrick 221*, Minneapolis; *Kassube 178*, Minneapolis; *Holzinger 162*, Winona Co.; *Herrick 222*, Minneapolis; *Bailey 3*, Vermilion lake; *Roberts 101*, Grand Marais; *Herrick 224*, Minneapolis; *Sandberg 424*, Cannon Falls; *Herb. Wickersheim 94*, Ash lake, Lincoln Co.; *Herb. Moyer 180*, Montevideo.

TEUCRIUM LINN. Gen. 467 (1737).

Leucosceptrum SM. Ex. Bot. II, 113 (1805).
Poliodendron NOE, Webb, Phyt. Car. III, 106 (1847).
Scorodonia MOENCH, Meth. 384 (1794).
Scordium CAV. Ic. I, 19 (1791).
Chamaedrys MOENCH, Meth. 383 (1794).
Polium MOENCH, Meth. 385 (1794).

Benth. and Hook., *Gen. Pl.* II, 1221; Durand, *Ind. Gen. Phan.* 330; Baillon, *Hist. Pl.* XI, 75.

Living species: 100±; cosmopolitan except in subarctic and antarctic regions. Europe, 50; Russia, 9; N. America, 4; S. Sts., 1; E. Sts., 2; Canada, 2; Rocky mts., 2; California, 2; Pl. Wheel., 1; W. Tex., 4.

Teucrium canadense LINN. Spec. 564 (1753).

T. virginicum LINN. Spec. 564 (1753) Pl. Gronov.

Wats. and Coult., Gray's Man. 6 ed. 406; Britt., Fl. N. J. 203; Upham, Fl. Minn. 103; Mac., Fl. Can. I, 380; II, 349; Webb., Fl. Neb. 138; Chap., Fl. S. St. 328; Led., Fl. Ross. III, 446; Roth., Wheel. Exp. 225; Cov., Fl. Ark. 213; Gray, Syn. Fl. II, 1, 349; Coult., Fl. Tex. 333.

Altai Siberia?

North America: N. B , N. S., Q., Ont. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Ark., Tex. and Mex.

Minn. valley: Throughout; low banks and edges of thickets.

HERB.: *Sheldon 1542*, Lake Benton; *Ballard 463*, Prior's lake, Scott Co.; *Taylor 982*, Glenwood; *Taylor 678*, Minnesota lake; *Oestlund 132*, Minneapolis; *Holzinger 160*, Winona Co.; *Herrick 220*, Minneapolis; *Holzinger 161*, Winona; *Herb. Moyer 178, 179*, Montevideo.

ISANTHUS MICHX. Fl. Bor.-Am. II, 3, t. 30 (1803).

Benth. and Hook., *Gen. Pl.* II, 1220; Durand, *Ind. Gen. Phan.* 330; Baillon, *Hist. Pl.* XI, 76.

Living species: 1, N. America.

Isanthus brachiatus (LINN.) B. S. P. Cat. N. Y. (1888).

Trichostema brachiatus LINN. Spec. 834 (1753).

Isanthus caeruleus MICHX. Fl. N. Am. II, 30 (1803).

Wats. and Coult., Gray's Man. 6 ed. 406; Britt., Fl. N. J. 203; Upham, Fl. Minn. 103; Mac., Fl. Can. I, 379; Chap., Fl. S. St. 327; Cov., Fl. Ark. 213; Gray, Syn. Fl. II, 1, 349; Coult., Fl. Tex. 332.

North America: Q., Ont. to N. Eng., N. J., Tenn. and N. Car.; W. to Minn., Ill., Mo. and Ark.

Minn. valley: Forest district to Blue Earth Co.; infrequent; banks and sandy fields.

XCV. SOLANACEAE. Nightshade Family.

Endlicher, *Gen. Pl.* 662 (1836–40); Bentham and Hooker, *Genera Plant.* II, 882 (1876); Baillon, *Hist. Pl.* IX, 281 (1888); v. Wettstein *in Engler and Prantl, Nat. Pflanz.* IV, 3 *b*, 4 (1891).

Genera: 75; tropical and temperate regions; center in C. and S. America. N. America, 18 gen.; Europe, 10; Asia, 15 (*v. Wettst.*).

Species: 1500±, many doubtfully of sp. rank; 1 2 fossil, very doubtful, *Solanites*.

PHYSALIS LINN. Gen. 144 (1737).

Pentaphiltrum REICH. Nomencl. 4571 (1841).

Baillon, *Hist. Pl.* IX, 330; Benth. and Hook., *Gen. Pl.* II, 890: Durand, *Ind. Gen. Phan.* 287; Engler and Prantl, *Nat. Pflanz.* IV, 3 *b*, 19 (von Wettstein).

Living species: 45; warmer regions of the earth; especially in N. and S. America. Europe, 2; Russia, 1; Japan, 3; Africa, S. Asia and Australia, 1; N. America, 18; Rocky mts., 6–7; California and L. Calif., 6; S. Sts., 5; E. Sts., 7–8; Canada, 4; Pl. King, 1; Pl. Wheel., 2; W. Tex., 12.

Physalis lanceolata MICHX. Fl. N. Am. I, 149 (1803).

P. pumila NUTT. Trans. Phil. Soc. VII, 193 (1841).

P. pennsylvanica GRAY, Man. 5 ed. 382 (1867).

Wats. and Coult., Gray's Man. 6 ed. 375; Webb., Fl. Neb. 136; Mac., Fl. Can. I, 350; Upham, Fl. Minn. 111; Coult., Fl. Colo. 270; Cov., Fl. Ark. 207; Gray, Syn. Fl. II, 1, 236; Coult., Fl. Tex. 301.

North America: Ont. to S. Man.; S. to N. Y. and Fla.; W. to Minn., Dak., Colo., Utah, N. Mex. and Tex.

Minn. valley: Throughout; abundant; waste places.

HERB.: *Sheldon 1471*, Pipestone City; *Ballard 468*, Prior's lake, Scott Co.; *Taylor 858*, Glenwood; *Ballard 180*, Jordan, Scott Co.; *Ballard 269*, Jordan, Scott Co.; *Oestlund 146*, Hennepin Co.; *Kassube 199*, Minneapolis; *Leiberg 52*, Blue Earth Co.; *Holzinger 184*, Dakota Co.; *Herrick 247*, Minneapolis; *Gedge 10*, Detroit; *Hammond 32*, Lake City; *Herb. Sheld. 1805*, Minneapolis.

Physalis virginiana MILL. Dict. ed. 8, No. 4 (1768).

P. nyctaginea DUNAL, DC. Prodr. XIII, 450 (1849).
P. viscosa GRAY, Man. 5 ed. 382 (1867).

Wats. and Coult., Gray's Man. 6 ed. 375; Britt., Fl. N. J. 182; Webb., Fl. Neb. 136; Upham, Fl. Minn. 111; Mac., Fl. Can. I, 349; Chap., Fl. S. St. 350; Coult., Fl. Colo. 270; Cov., Fl. Ark. 207; Gray, Syn. Fl. II, 1, 235; Coult., Fl. Tex. 300.

North America: W. Ont. to L. Huron reg., Minn., Neb., Dak. and Colo.; S. to N. J. and Fla., Ark. and Tex.

Minn. valley: Throughout; common; waste places.

HERB.: *Ballard 269*, Jordan, Scott Co.; *Sheldon 255*, Turtle lake, Le Sueur Co ; *Ballard 375*, Helena, Scott Co.; *Sheldon 1504*, Lake Benton; *Sheldon 911*, Sleepy Eye; *Huntington 12*, Rock Co.; *Kassube 198*, Minneapolis; *Holzinger 182*, Tracy, Lyon Co.; *Holzinger 183*, Winona Co.; *Herb. Sheld. 1750*, Minneapolis.

Physalis pubescens LINN. Spec. 262 (1753).

P. pruinosa LINN. Spec. 263 (1753).
P. obscura var. *viscido-pubescens* MICHX. Fl. N. Am. I, 149 (1803).
P. viscosa ELL. Sk. I, 279 (1821).
P. hirsuta DUNAL, DC. Prodr. XIII, 450 (1849).

Wats. and Coult., Gray's Man. 6 ed. 375; Britt., Fl. N. J. 182; Upham, Fl. Minn. 111; Webb., Fl. Neb. 136; Brew. and Wats., Fl. Calif. I, 541; Coult. Fl. Colo., 270; Chap., Fl. S. St. 351; Mac., Fl. Can. I, 349; Forbes and Hems., Fl. Sin. II, 174; Griseb., Fl. W. I.; Wats., King Exp. 274; Cov., Fl. Ark. 207; Gray, Syn. Fl. II, 1, 234; Engl. v. Wetts., Nat. Pflanz. IV, 3 *b*, 19; Coult., Fl. Tex. 300.

China; Barbadoes; Brazil and tropical America.

North America: N. Br. to Brit. Col.; S. to Calif., Colo., Tex. and Fla.

Minn. valley: S. E. and C. districts; to New Ulm and the Lac Qui Parle valley; low, damp soil.

Physalis angulata LINN. Spec. 262 (1753).

Wats. and Coult , Gray's Man. 6 ed. 375; Britt., Fl. N. J. 181; Webb., Fl. Neb. 136; Upham, Fl. Minn. 111; Coult., Fl. Colo. 269; Chap.. Fl. S. St. 351; Cov., Fl. Ark. 207; Gray, Syn. Fl. II, 1, 234; Coult., Fl. Tex. 300.

North America: N. J. to Minn. and Neb.; S. to Tex. and Fla. "Widely diffused in the tropics" (*Gray*).

Minn. valley: N. E. district; infrequent; waste places.

Physalis philadelphica LAM. Enc. Meth. II, 101 (1786).

P. chenopodifolia WILLD. Spec. I, 1023 (1797).

Wats. and Coult., Gray's Man. 6 ed. 375; Britt., Fl. N. J. 181; Upham, Fl. Minn. 111; Cov., Fl. Ark. 207; Gray, Syn. Fl. II, 1, 234; Engl. v. Wetts., Nat. Pflanz. IV, 3 *b*, 19; Coult., Fl. Tex. 300.

North America: N. J. to Minn.; S. to Ill., Ark. and Texas.

Minn. valley: S. central district; Blue Earth valley to Redwood valley; low rich ground in thickets.

Physalis grandiflora HOOK. Fl. Bor. Am. II, 90 (1840).

Wats. and Coult., Gray's Man. 6 ed. 375; Mac., Fl. Can. I, 349; Upham, Fl. Minn. 111; Gray, Syn. Fl. II, 1, 233.

North America: St. Lawrence river to L. Champlain; W. to Man. and Saskatchewan; S. to Minn.

Minn. valley: N. edge; local or rare; clearings and waste in forest.

HERB.: *Bailey 242*, Vermilion lake.

SOLANUM LINN. Gen. 145 (1737).

Aquartia LINN. Gen. ed. VI, 136 (1764).
Normania LOWE, Man. Fl. Mader. II, 70 (1868).
Cliocarpus MIERS. Ann. Nat. Hist. 2, IV, 141 (1859).
Nycterium VENT. Jard. Malm. t. 85 (1804).
Androcera NUTT. Gen. I, 129 (1818).
Melogona TOURN. Inst. 151 (1700).
Pseudocapsicum MOENCH, Meth. 476 (1794).
Dulcamara MOENCH, l. c. 514 (1794).
Ceranthera MOENCH, Monthl. Mag. (1819).
Cyphomanera SENDT. Flora, 162 (1845).
Pionandra MIERS. Hook. Lond. Journ. IV, 353 (1845).
Cyathostyles SCHOTT. ex Meiss. Gen. Com. 184 (1843).
Pallavicinia DENOT. Flora, 162 (1847).
Lycopersicum DUNAL, Solan. t. 3, fig. 3 (1816).
Psolanum NECK. Elem. 708 (1790).

Baillon, *Hist. Pl.* IX, 327; Benth. and Hook., *Gen. Pl.* II, 888, 889; Durand, *Ind. Gen. Phan.* 287; Engler and Prantl, *Nat. Pflanz.* IV, 3 *b*, 21 (von Wettstein); Schenck, *Palaeophyt.* 777.

Living species: 1000+ described; 950 distinct; tropical and subtropical regions; extra tropical north rather than south. Europe, 9; Russia, 8; Russian Europe, 5; N. America, 15; Rocky mts., 5; S. Sts., 10; California, 5; E. Sts., 6; Pl. Wheel., 6; Canada, 3; Pl. King, 2; W. Tex. 11.

Fossil species: *Solanites,* Oligocene—Aix (*Saporta*).

Solanum nigrum LINN. Spec. 266 (1753).

S. pterocaulon
S. crenato - dentatum } DC. Prodr. XIII, 359 (1852).
S. ptycanthum

Wats. and Coult., Gray's Man. 6 ed. 374; Britt., Fl. N. J. 181; Upham, Fl. Minn. 111; Mac., Fl. Can. I, 348; Chap., Fl. S. St. 348; Webb., Fl. Neb. 136; Coult., Fl. Colo. 268; Brew. and Wats., Fl. Calif. I, 538; Forbes and Hems., Fl. Sin. II, 171; Hook., Fl. Gt. Brit. 287; Led., Fl. Ross. III, 188; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 94; Wats., King Exp. 274; Roth., Wheel. Exp. 207; Cov., Fl. Ark. 207; Gray, Syn. Fl. II, 1, 227; Hart., Fl. Scand. I, 103; Engl. v. Wetts., Nat. Pflanz. IV, 3 *b*, 22; Coult., Fl. Tex. 297.

Cosmopolitan, temperate and tropical regions.

North America: Throughout, except far north.

Minn. valley: Throughout; common; low damp and rich soil; shaded places.

HERB.: *Taylor 903,* Glenwood; *Ballard 494,* Prior's lake, Scott Co.; *Ballard 778,* Swan lake, Carver Co.; *Sheldon 1013,* Sleepy Eye; *Holzinger 180,* Winona Co.; *Sandberg 459,* Cannon Falls; *Holzinger 181,* Winona; *Kassube 197,* Minneapolis; *Herrick 246,* Minneapolis; *Herb. Sheld. 1744,* Minneapolis; *Herb. Sheld. 1673,* Ft. Snelling; *Herb. Wickersheim 105,* Ash lake, Lincoln Co.

XCVI. SCROPHULARIACEAE. Figwort Family.

Endlicher, *Gen. Pl.* 670; DC., Prodr. X, 187 (1846)—*Personatae, Antirrhineae, Rhinanthaceae;* Bentham and Hooker, *Gen. Plant.* II, 913 (1876); Baillon, *Hist. Pl.* IX, 413 (1888); v. Wettstein *in Engler and Prantl, Nat. Pflanz.* IV, 3 *b*, 39 (1891).

Genera: 150±, temperate and tropical regions. N. America, 38 gen., 380 spec.; Europe, 30 gen., 430 spec. (*v. Wettst.*).

Species: 2100±; 3–4 fossil, doubtful.

SCROPHULARIA LINN. Gen. 494 (1737).

Ceremanthe REICH. Sax. Fl. 230 (1842).

Benth. and Hook., *Gen. Pl.* II, 937; Durand, *Ind. Gen. Phan.* 293; Baillon, *Hist. Pl.* IX, 430; Engler and Prantl, *Nat. Pflanz.* IV, 3 *b*, 65; Schenck, *Palaeophyt.* 778.

Living species: 114; extra-tropical regions of N. hemisphere; especially abundant in the Mediterranean region.

Europe, 40; Russia, 21; Russian Europe, 9; N. America, 3; Canada, 3; N. Mexico, 1; California, 1; Pl. Wheel., 2.

Fossil species: *Scrofularina*, 1, Miocene of Oeningen (*Heer*).

Scrophularia nodosa Linn. var. **marylandica** (Linn.) Gray, Syn. Fl. II, 1, 258 (1886).

S. marylandica Linn. Spec. 863 (1753).
S. lanceolata Pursh, Fl. Am. 419 (1814).

Wats. and Coult., Gray's Man. 6 ed. 380; Britt., Fl. N. J. 184; Upham, Fl. Minn. 99; Webb., Fl. Neb. 137; Chap., Fl. S. St. 289; Coult., Fl. Colo. 273; Mac., Fl. Can. I, 354; II, 346; Brew. and Wats., Fl. Calif. I, 552; Hook., Fl. Gt. Brit. (spec) 290; Led., Fl. Ross. (spec.) III, 218; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. (spec.) 94; Cov. Fl. Ark. 207; Hart., Fl. Scand. I, 106 (spec.); Engler, v. Wetts., Nat. Pflanz. IV, 3 *b*, 65.

Species ranges through almost all Europe and Siberia.

North America: Q., Ont. to Minn. and Oregon; S. to N. Eng., N. J. and Fla.; W. to Minn., Colo., Neb., Utah.

Minn. valley: Throughout; frequent; thickets and gravelly banks of streams.

Herb.: *Ballard 103*, Shakopee; *Taylor 588*, Minnesota lake; *Sheldon 974*, Sleepy Eye; *Taylor 123*, Janesville; *Sheldon 51*, Elysian; *Sheldon 128*, Madison Lake; *Kassube 160*, Minneapolis; *Herrick 196*, Minneapolis; *Sandberg 397*, Cannon Falls; *Herb. Sheld, 1904*, Minneapolis; *Herb. Moyer 162*, Montevideo.

CHELONE Linn. Gen. 508 (1737).

Baillon, *Hist. Pl.* IX, 435; Benth. and Hook., *Gen. Pl.* II, 939; Durand, *Ind. Gen. Phan.* 293; Engler and Prantl, *Nat. Pflanz.* 4, 3 *b*, 65 (von Wettstein).

Living species: 4; N. America; 1 in California and Washington; E. Sts., 2; S. Sts., 3; Carolina, 1.

Chelone glabra Linn. Spec. 611 (1753).

C. alba Pursh, Fl. Am. 427 (1814).

Wats. and Coult., Gray's Man. 6 ed. 381; Britt., Fl. N. J. 184; Upham, Fl Minn. 99; Chap., Fl. S. St. 289; Mac., Fl. Can. I, 354; Cov., Fl. Ark. 207; Gray, Syn. Fl. II, 1, 258; Engl. Wetts., Nat. Pflanz. IV, 3 *b*, 65.

North America: Newf., N. S., N. Br. to S. and W. Man.; S. to N. Eng., N. J. and Fla.; W. to Minn. and Ark.

Minn. valley: Forest district; swamps and marshes.

Herb.: *Herrick 197*, Minneapolis; *Winchell 13*, Duluth; *Bailey 327*, St. Louis river; *Holzinger 144*, Winona Co.; *Sandberg 398*, Red Wing; *Roberts 95*, Baptism river; *Herb. Sheld. 1668*, Minneapolis.

PENSTEMON MITCH. Act. Med. Cur. VIII, 214 (1748).
Pentstemon L'HER. ex Lamb. Linn. Trans. X, 6 (——).
Elmigera REICHB. Conspect 123 (1828).
Lepidostemon LEME. Ill. Hort. 315 (1844).
Dasanthera RAF. Jour. Phys. LXXXIX, 99 (1819).

Baillon, *Hist. Pl.* IX, 435; Benth. and Hook., *Gen. Pl.* II, 940; Durand, *Ind. Gen. Phan.* 293; Engler and Prantl, *Nat. Pflanz.* IV, 3 *b*, 65 (*von Wettstein*) as *Pentastemon* Mitch.

Living species: 82–85; N. America, 70; a few in Mexico and N. Asia; Canada, 15; California, 35; E. Sts., 9; S. Sts., 3; Rocky mts., 27–30; Pl. King., 19; Pl. Wheel., 24; W. Tex., 15.

Penstemon acuminatus DOUGL. Hook., Fl. Am. II, 97 (1840).
P. nitidus DOUGL. ex Benth. DC. Prodr. X, 325 (1846).
P. fendleri GRAY, Pac. R. R. Rep. II, 168 (1855).

Wats. and Coult., Gray's Man. 6 ed. 382; Gray, Syn. Fl. II, 1, 263; Upham, Fl. Minn. 99; Coult., Fl. Colo. 275; Mac., Fl. Can. I, 355,570; Brew. and Wats., Fl. Calif. I, 599; Coult., Fl. Tex. 308.

North America: Minn. and Saskatchewan to Brit. Col. and Oregon; S. to Colo. and Tex. Mexico.

Minn. valley: W. district; high knolls and dry plains or banks.

HERB.: *Sheldon 1370*, Lake Benton.

Penstemon grandiflorus NUTT. Fras. Cat. (1813).
P. bradburii PURSH, Fl. Am. 738 (1814).
Chelone grandiflora SPRENG. Syst. II, 813 (1825).

Wats. and Coult., Gray's Man. 6 ed. 382; Webb., Fl. Neb. 137; Upham, Fl. Minn. 99; Wats., King Exp. 452; Gray, Syn. Fl. II, 1, 264; Coult., Fl. Tex. 308.

North America: Ill., Wisc., Minn., Dak., Neb., Kan., Tex.

Minn. valley: Throughout; frequent; particularly abundant in Renville Co.; banks and dry hills.

HERB.: *Ballard 243*, Jordan, Scott Co.; *Sheldon 827*, Cottonwood river, near Sleepy Eye; *Oestlund 115*, Hennepin Co.; *Herrick 199*, Minneapolis; *Richardson 1*, Goodhue Co.; *Kassube 161*, Minneapolis; *Sandberg 399*, Cannon Falls; *Herb. Sheld. 1889*, Ft. Snelling; *Herb. Wickersheim 90*, Idlewild, Lincoln Co.; *Herb. Moyer 164*, Montevideo.

Penstemon teretiflorus NUTT. Fras. Cat. (1813).
P. albidus NUTT. Gen. II, 53 (1818).
P. viscidulum NEES, Neuwied App. 18 (——).
P. cristatus MAC. Fl. Can. I, 355 (1884).
Chelone alba SPRENG. Syst. II, 813 (1825).

Wats. and Coult., Gray's Man. 6 ed. 382; Webb., Fl. Neb. 137; Mac., Fl. Can. I, 570; Coult., Fl. Colo. 276; Roth., Wheel. Exp. 211; Wats., King Exp. 454; Gray, Syn. Fl. II, 1, 266; Coult., Fl. Tex. 308.

North America: Red River prairie, 49° N. lat. to Minn. valley, near Appleton; S. and W. to Dak., Col., Neb. and Tex.

Minn. valley: S. W. district and probably N. W.; dry banks and knolls.

HERB.: *Menzel 3*, Pipestone; *Herb. Moyer 264*, Montevideo.

Penstemon gracilis NUTT. Gen. II, 52 (1818).

P. pubescens var. *gracilis* GRAY, Proc. Am. Acad. VI, 57 (1862).
Chelone gracilis SPRENG. Syst. II, 813 (1825).

Wats. and Coult., Gray's Man. 6 ed. 382; Gray, Syn. Fl. II, 1, 267; Webb., Fl. Neb. 137; Coult., Fl. Colo. 277; Mac., Fl. Can. I, 356; Upham, Suppl. Minn. 86.

North America: Minn., Man. and Saskatchewan to Wyoming and Colo.

Minn. valley: Throughout; infrequent; open places, banks and knolls.

HERB: *Menzel 8*, Pipestone; *Ballard 244*, Jordan, Scott Co.; *Ballard 382*, Jordan; *Taylor 789*, Glenwood; *Sandberg 609*, Cannon Falls; *Herrick 341*, Minneapolis; *Holzinger 297*, Winona Co.; *Kassube 278*, Minneapolis; *Herrick 345*, Minneapolis.

Penstemon hirsutus (LINN.) WILLD. Spec. III, 227 (1800).

Chelone hirsutus LINN. Spec. 849 (1753).
C. pentstemon LINN. Mant. 415 (1767).
Pentstemon pubescens SOLAND. Ait. Hort. Kew. II, 360 (1789).

Wats. and Coult., Gray's Man. 6 ed. 381; Mac., Fl. Can. I, 356; Upham, Fl. Minn. 99; Chap., Fl S. St. 290; Britt., Fl. N. J. 184; Wats., King Exp. 454; Cov., Fl. Ark. 207; Gray, Syn. Fl. II, 1, 268; Engl. Wettst., Nat. Pflanz. IV, 3, 65; Coult., Fl. Colo. 309.

North America: Ont. to S. Man., Minn. and Iowa; S. to Maine, N. J., Fla. and Tex.

Minn. valley: W. district; high dry prairies; also N. E. and S. E.; open places.

HERB.: *Sheldon 1566*, Lake Benton; *Kassube 161*, Minneapolis; *Herrick 198*, Minneapolis; *Herb. Wickersheim 91*, Idlewild; *Gedge 20*, Moorhead; *Wickersheim 136*, Lake Benton; *137*, Lake Benton (the last two Nos. are apparently intermediate forms between *P. teretiflorus* Nutt. and *P. hirsutus* (Linn.), having the foliage of the former and the flowers and pubescence of the latter.—*Sheldon.*

MIMULUS LINN. Act. Ups. 82 (1741).

Eunanus BENTH. DC. Prodr. X, 374 (1846).
Diplacus NUTT. Ann. Nat. Hist. 1, I, 37 (—).

Uvedalia R. Br. Prodr. 440 (1810).

Erythranthe Spach, Suit. Buff. IX, 312 (1840).

Baillon, *Hist. Pl.* IX, 450; Benth. and Hook., *Gen. Pl.* II, 946, 1245; Durand, *Ind. Gen. Phan.* 294; Engler and Prantl, *Nat. Pflanz.* IV, 3 *b*, 71 (*von Wettstein*).

Living species: 60; W. extratropical America and a few in S. and E. Asia, Australia and E. Africa. Russia, 2; Europe, 1, introduced; Canada, 8; E. Sts., 3; S. Sts., 2; Pl. Wheel., 12; Pl. King, 12; Rocky mts., 7-8; California, 30; W. Tex., 4.

Mimulus glabratus HBK. var. **jamesii** (T. and G.) Gray, Syn. Suppl. II, 447 (1886).

M. jamesii T. and G. Man. 2 ed. 287 (1852).

M. glabratus Gray, Bot. Mex. Bound 116 (1856).

Wats. and Coult., Gray's Man. 6 ed. 383; Mac., Fl. Can. I, 357; Coult., Fl. Colo. 280; Upham, Fl. Minn. 99; Mac., Fl. Can. I, 570; Wats., King. Exp. 224; Gray, Syn. Fl. II, 1, 276; Coult., Fl. Tex. 309.

North America: Ont. to Mich., Ill., Minn., Neb. and Mont.; S. to Tex., Arizona, N. Mex. and Mexico.

Minn. valley: Throughout; N. districts and to Blue Earth Co.; cool rills and springs; aquatic.

Herb.: *Taylor 757*, Glenwood; *Oestlund 117*, Minneapolis; *Herrick 201*, Minneapolis; *Herrick 202*, Minneapolis; *Kassube 164*, Minneapolis; *Sandberg 401*, Cannon Falls.

Mimulus ringens Linn. Spec. 634 (1753).

Wats. and Coult., Gray's Man. 6 ed. 383; Britt., Fl. N. J. 185; Upham, Fl. Minn. 99; Webb., Fl. Neb. 137: Chap., Fl. S. St. 291; Mac., Fl. Can. I, 357; Led. Fl. Ross. III, 223; Miyabe, Fl. Kur. 253; Gray, Syn. Fl. II, 1, 276 and Suppl. Syn. II, 446; Coult., Fl. Tex. 309.

Kurile Islands.

North America: Cape Breton to Hudson Bay and Saskatchewan; S. to N. Eng., N. J. and N. Car.; W. to Minn., Neb. and Tex.

Minn. valley: Throughout; banks of streams and shores of lakes.

Herb.: *Sheldon 948*, Redwood Falls; *Taylor 1081*, Glenwood; *Taylor 739*, Glenwood; *Ballard 715*, Benton, Carver Co.; *Sheldon 689*, Waseca; *Ballard 811*, Page lake, Carver Co.; *Ballard 670*, Waconia; *Ballard 612*, Chaska; *Ballard 497*, Prior's lake, Scott Co.; *Oestlund 116*, Minneapolis; *Roberts 96*, Stewart river; *Holzinger 145*, Winona Co.; *Kassube 163*, Minneapolis; *Herrick 200*, Minneapolis; *Bailey 116*, Vermilion lake; *Sandberg 400*, Cannon Falls; *Herb. Sheld. 1676*, Minneapolis; *Herb. Moyer 165, 166*, Montevideo; *Sheldon 1086½*, Springfield.

GRATIOLA LINN. Gen. 833 (1737).

Sophronanthe BENTH. Lindl. Introd. ed. 2, 445 (1835).
Nibora RAF. Fl. Lud. 36 (1817).
Fonkia PHIL. Linn. XXX, 198 (1856).

Baillon, *Hist. Pl.* IX, 448; Benth. and Hook., *Gen. Pl.* II, 953; Durand, *Ind. Gen. Phan.* 295; Engler and Prantl, *Nat. Pflanz.* IV, 3 *b*, 75 (*von Wettstein*).

Living species: 25; cosmopolitan, but especially in extra-tropical regions. Russia, 1; Russian Europe, 1; N. America, 13; S. Sts., 10; Rocky mts , 1; California, 2; Canada, 3; E. Sts. 5; Pl. King, 1; Pl. Wheel., 1; W. Tex., 6.

Gratiola virginiana LINN. Spec. 17 (1753).

G. officinalis MICHX. Fl. N Am. I, 6 (1803).
G. carolinensis PERS. Syn. I, 14 (1805).
G. neglecta TORR. Cat. N. Y. Pl. (1819).
G. missouriana BECK, Am. Journ. Sci. ser. i, X, 258 (1826).
Conobea borealis SPRENG. Syst. II, 771 (1825).

Wats. and Coult., Gray's Man. 6 ed. 384; Britt., Fl. N. J. 185; Coult., Fl. Colo. 281; Upham, Fl. Minn. 99; Chap., Fl. S. St. 292; Mac., Fl. Can. I, 358; Brew. and Wats., Fl. Calif. I, 570; Wats., King Exp. 227; Roth , Wheel. Exp. 214; Cov., Fl. Ark. 208; Gray, Syn. Fl. II, 1, 281; Engl. Wettst., Nat. Pflanz. IV, 3, 75; Coult., Fl. Tex. 311.

North America: Q., Ont. to Man., Brit. Col. and N. W. T.; S. to Oregon and Calif.; S to Minn., Dak. and Neb. to Ark.; E. to N. Eng., N. J. and Fla.

Minn. valley: Forest district to Nicollet Co.; wet places, marshes and peat bogs.

HERB.: *Herrick 204,* St. Louis river; *Holzinger 146,* Winona Co.; *Holzinger 147* and *148,* Winona Co.

ILYSANTHES RAF. Ann. Nat. 13 (1820).

Bonnaya LINK and OTT. Pl. Sel. 25 (1840).

Baillon, *Hist. Pl.* IX, 458 (*sub Torenia* Linn.); Benth. and Hook., *Gen. Pl.* II, 955; Durand, *Ind. Gen. Phan.* 295; O. Kuntze, *Rev. Gen.* II, 461; Engler and Prantl, *Nat. Pflanz.* IV, 3 *b*, 80 (*von Wettstein*).

Living species: 17; tropical regions, and N. America and Australia; S. Africa. N. America, 3; S. Sts. 3; Canada, 1; California, 1; E. Sts., 1; W. Tex., 1.

Ilysanthes gratioloides (LINN.) BENTH. DC. Prodr. X, 418 (1846).

Capraria gratioloides LINN. Spec. 2 ed. 876 (1762).
Gratiola anagallidea MICHX. Fl. N. Am. I, 5 (1803).
G. dilatata MUHL. Cat. (1813).
Lindernia pyxidaria PURSH, Fl. Am. 419 (1814).
Herpestis callitrichoides HBK. N. Gen. et Spec. (1818).
Ilysanthes riparia RAF. Ann. Nat. 13 (1820).
? *Gratiola tetragona* ELL. Sk. I, 15 (1821).
G. attenuata SPRENG. Syst. I, 39 (1825).

Wats. and Coult., Gray's Man. 6 ed. 385; Britt., Fl. N. J. 186; Mac., Fl. Can. I, 359; II, 348; Upham, Fl. Minn. 100; Chap., Fl. S. St.294; Brew. and Wats., Fl. Calif. I, 571; Webb., Fl. Neb. 137; Cov., Fl. Ark. 208; Gray, Syn. Fl. II, 1, 283; Engl. Wettst., Nat. Pflanz. IV, 3 *b*, 80; Coult., Fl. Tex. 311.

Naturalized in Europe; E. Asia; S. America.

North America: N. Br., Q., Ont. to Minn. and Oregon; S. in Sierra Nevada; U. S., east of the Mississippi, throughout.

Minn. valley: Forest district to Blue Earth Co.; wet places and peat bogs.

HERB.: *Ballard 319*, Belle Plaine; *Herrick 205*, Minneapolis; *Holzinger 149*, Winona Co.; *Sandberg 402*, Red Wing; *Holzinger 150*, Winona.

VERONICA LINN. Gen. 10 (1737).

Hebe JUSS. Gen. 105 (1786).
Pygmaea HOOK. f. N. Zeal. Fl. 217 (1867).
Cymbophyllum F. MULL. Hook. Kew. Journ. VIII, 202 (1857).
Leptandra NUTT. Gen. I, 1 (1818).
Diplophyllum LEHM. Ges. Nat. Berl. Mag. VIII, 310 (1803).

Baillon, *Hist. Pl.* IX, 465; Benth. and Hook., *Gen. Pl.* II, 964; Durand, *Ind. Gen. Phan.* 297; Engler and Prantl, *Nat. Pflanz.* IV, 3 *b*, 85 (*von Wettstein*); Schenck, *Palaeophyt* 778.

Living species: 200±; temperate and colder regions; richly developed in mt. districts. Mts. of New Zealand, 59; Europe, 75; Russia, 55; N. America, 11; E. Sts., 8; S. Sts., 6; Canada, 11; Rocky mts., 6; California, 5–6; Pl. Wheel., 4–5; Pl. King, 5; W. Tex., 1.

Fossil species: *Veronicites* in Miocene of Oeningen (*Heer*).

Veronica peregrina LINN. Spec. 20 (1753).

V. marilandica MURR. Comm. Gött. II, 3 (1782).
V. caroliniana WALT. Fl. Car. 61 (1788).
V. xalipensis HBK. N. Gen. et Spec. (1818).

Wats. and Coult., Gray's Man. 6 ed. 387; Britt., Fl. N. J. 187; Webb., Fl. Neb 137; Chap., Fl. S. St. 295; Coult., Fl. Colo. 283; Upham, Fl. Minn. 100; Mac., Fl. Can. I, 362; Brew. and Wats., Fl. Calif. I, 572; Forbes and Hems., Fl. Sin. II, 199; Nym., Fl. Eur.; Led., Fl. Ross. III, 249; Roth., Wheel. Exp. 215; Wats., King Exp. 228; Cov., Fl. Ark. 208; Gray, Syn. Fl. II, 1, 288; Engl. v. Wetts., Nat. Pflanz. IV, 3 *b*, 85; Coult., Fl. Tex. 312.

Europe; Asia, Japan, China; S. America—Chile to Patagonia.

North America: Throughout continent, from Arctic sea to Mexico and C. America.

Minn. valley: Throughout, except far W.; waste ground.

HERB.: *Ballard 517*, Long lake, Scott Co.; *Taylor 430*, Janesville; *Kassube 168*, Minneapolis; *Oestlund 120*, Ramsey Co.; *Holzinger 154*, Winona; *Herrick 208*, Minneapolis; *Sandberg 408*, Goodhue Co.

Veronica scutellata LINN. Spec. 16 (1753).

Wats. and Coult., Gray's Man. 6 ed. 387; Britt., Fl. N. J. 187; Mac., Fl. Can. I, 361; Upham, Fl. Minn. 100; Coult., Fl. Colo. 282; Brew. and Wats., Fl. Calif. I, 572; Nym., Fl. Eur.; Led., Fl. Ross. III, 244; Hook., Fl. Gt. Brit. 302; Herd., Fl. Eur. Russ. 96; Gray, Syn. Fl. II, 1, 287; Hart., Fl. Scand. I, 111; Engl. v. Wetts., Nat. Pflanz. IV, 3 *b*, 86.

Europe: Arctic to S. Russia and westward; Siberia and N. Africa.

North America: Atl. to Pac. in Can. and N. to 56° N. lat.; S. to Oregon, N. Calif., Minn., Mont., N. Eng., and N. J.

Minn. valley: Forest district; rare; bogs and marshes.

HERB.: *Holzinger 152*, Winona Co.; *Bailey 99*, Vermilion lake; *Holzinger 153*, Winona.

Veronica americana SCHWEIN. Herb. Hook., DC. Prodr. X, 460 (1846).

V. beccabunga Auct. Amer. Vet.
V. intermedia SCHWEIN. Am. Jour. Sci. ser. I, VIII, 268 (1824).
V. anagallis BONG. Veg. Sitka (1841).

Wats. and Coult., Gray's Man. 6 ed. 386; Britt., Fl. N. J. 187; Mac., Fl. Can. I, 360; Webb., Fl. Neb. 137; Upham, Fl. Minn. 100; Brew. and Wats., Fl. Calif. I, 572; Coult., Fl. Colo. 282; Gray, Syn. Fl. II, 1, 287; Roth., Wheel. Exp. 215; Wats., King Exp. 227; Cov., Fl. Ark. 208; Engl. v. Wetts., Nat. Pflanz. IV, 3 *b*, 86.

North America: Anticosti, N. S., N. Br. to Pac.; N. to Athabasca and Sitka; S. to N. Eng., N. J.; W. to Mont., Dak., Colo., N. Mex.; S. in Calif.

Minn. valley: Throughout; frequent; springs, rills and ditches.

HERB.: *MacMillan 14*, Glenwood; *Taylor 754*, Glenwood; *Ballard 107*, Carver; *Ballard 627*, Chaska; *Sheldon 721*, Sleepy Eye; *Roberts 98*, Beaver bay; *Holzinger 151*, Winona Co.; *Sandberg 406*, Cannon Falls; *Kassube 167*, Minneapolis; *Herrick 207*, Minneapolis; *Oestlund 119*, Minneapolis; *Sandberg 407*, Chisago Co.; *Herb. Sheld. 1760*, Ramsey Co.

Veronica anagallis LINN. Spec. 16 (1753).

Wats. and Coult., Gray's Man. 6 ed. 386; Britt., Fl. N. J. 187; Webb., Fl. Neb. 136; Mac., Fl. Can. I, 360; Upham, Fl. Minn. 100; Coult., Fl. Colo. 282; Brew. and Wats., Fl. Calif. I, 572; Gray, Syn. Fl. II, 1, 287; Forbes and Hems., Fl. Sin. II, 198; Nym., Fl. Eur.; Led., Fl. Ross. III, 236; Hook.. Fl. Gt. Brit. 302; Herd., Fl. Eur. Ross. 96; Wats., King Exp. 227; Engl. Wettst., Nat. Pflanz. IV, 3 *b*, 86; Hart., Fl. Scand. I. 111.

Europe, except arctic reg.; Russ. to Caucasus, Sib., Dahuria, Kamtk. and China; N. Africa; intro.? in S. America.

North America: N. S., Q., Ont., Owen Sound. L. Superior reg., N. W. T., Rockies and coast of Brit. Col.; S. to Oregon; S. to N. Eng., N. J.; W. to Minn., Neb., Colo., N. Mex.

Minn. valley: Forest district; springs, rills and ditches; aquatic or semi-aquatic.

HERB.: *Ballard 998,* Long lake, Scott Co.; *Kassube 166,* Minneapolis; *Sandberg 405,* Cannon Falls.

Veronica virginica LINN. Spec. 9 (1753).

V. sibirica LINN. Spec. 2 ed. 12 (1762).
Leptandra virginica NUTT. Gen. I, 7 (1818).
L. purpurea RAF. Med. Bot. 59 (1830).

Wats. and Coult., Gray's Man. 6 ed. 386; Britt., Fl. N. J. 186; Mac., Fl. Can. I, 360; Webb., Fl. Neb. 137; Upham, Fl. Minn. 100; Chap., Fl. S. St. 295; Forbes and Hems., Fl. Sin. II, 200; Cov., Fl. Ark. 208; Gray, Syn. Fl. II, 1, 286; Engl. Wettst., Nat. Pflanz. IV, 3 *b*, 85.

Japan, China and E. Siberia.

North America: Ont. to Man., Minn. and Neb.; S. to Vt., N. J. and Alab.; W. to Kan. and Ark.

Minn. valley: Throughout; common; rich woods and river banks.

HERB.: *Sheldon 764,* Sleepy Eye; *Sheldon 665,* Waseca; *Sheldon 1096,* Springfield; *Sheldon 1348,* Lake Benton; *Ballard 510,* Prior's lake, Scott Co.; *Taylor 985,* Glenwood; *Ballard 312,* Belle Plaine; *Ballard 691,* Waconia; *Taylor 985a,* Glenwood; *Herrick 206,* Minneapolis; *Kassube 165,* Minneapolis; *Oestlund 118,* Minneapolis; *Leonard 32,* Minneapolis; *Sandberg 404,* Goodhue Co.; *Herb. Sheld. 1645,* Minneapolis.

SYNTHYRIS BENTH. DC. Prodr. X, 454 (1846).

Baillon, *Hist. Pl.* IX, 466; Benth. and Hook., *Gen. Pl.* II, 963; Durand, *Ind. Gen. Phan.* 296; Engler and Prantl, *Nat. Pflanz.* IV, 3 *b*, 87 (von Wettstein).

Living species: 7; mts. of W. N. America; 1, in E. Sts. Rocky mts., 4; California, 2; Illinois and Minn., 1.

Synthyris houghtoniana BENTH. DC. Prodr. X, 454 (1846).

Wats. and Coult., Gray's Man. 6 ed. 386; Upham, Fl. Minn. 100; Gray, Syn. Fl. II, 1, 286.

North America: Minn. to Mich.; S. to Ill., Mo. and Ind.

Minn. valley: N. E. districts; beside springs or edges of bogs; infrequent. Not found on "hills or ridges" very often.

HERB.: *Holtz 4,* Cedar lake, Hennepin Co.; *Sandberg 403,* Red Wing.

GERARDIA LINN. Gen. 503 (1737).

Virgularia R. and P. Prodr. Per. 92 (1794).
Dasystoma RAF. Jour. Phys. LXXXIX, 99 (1819).
Otophylla BENTH. DC. Prodr. X, 515 (1846).

Baillon, *Hist. Pl.* IX, 468; Benth. and Hook., *Gen. Pl.* II, 972; Durand, *Ind. Gen. Phan.* 298; Engler and Prantl, *Nat. Pflanz.* IV, 3 *b*, 92 (von Wettstein).

Living species: 30; N. and S. America, especially in extra-tropical regions. N. America, 23; S. Sts., 10; E. Sts., 13; Canada, 6; Pl. Wheel., 1; Rocky mts., 2; W. Tex., 8.

Gerardia pedicularia LINN. Spec. 611 (1753).

Dasystoma pedicularia BENTH. DC. Prodr. X, 521 (1846).

Wats. and Coult., Gray's Man. 6 ed. 389; Britt., Fl. N. J. 189; Mac., Fl. Can. I, 363; Upham, Fl. Minn. 101; Cov., Fl. Ark. 209; Gray, Syn. Fl. II, 1, 291; Chap., Fl. S. St. 298; Engl. v. Wetts., Nat. Pflanz. IV, 3 *b*, 93.

North America: Ont. to N. Eng., N. J. and Fla.; W. to Minn. and Ark.

Minn. valley: N. E. district; infrequent; thickets and dry woods.

HERB.: *Herrick 211,* Minneapolis.

Gerardia grandiflora BENTH. Comp. Bot. Mag. I, 206 (1835).

Dasystoma drummondii BENTH. DC. Prodr. X, 521 (1846).

Wats. and Coult., Gray's Man. 6 ed. 389; Upham, Fl. Minn. 101; Cov., Fl. Ark. 208; Gray, Syn. Fl. II, 1, 291; Engl. v. Wetts., Nat. Pflanz. IV, 3 *b*, 93; Coult., Fl. Tex. 314.

North America: Wisc., S. Minn., Iowa to Tenn. and Tex.; W. to Ark.

Minn. valley: Forest district; rare or doubtful; no Minn. specimens seen.

Gerardia virginica (LINN.) B. S. P. Cat. N. Y. (1888).

Rhinanthus virginicus LINN. Spec. 841 (1753).
Gerardia flava LINN. Herb.
G. quercifolia PURSH, Fl. Am. 423 (1814).
G. glauca SPRENG. Syst. II, 807 (1825).
Dasystoma quercifolia BENTH. DC. Prodr. X, 521 (1846).

Wats. and Coult., Gray's Man. 6 ed. 389; Britt., Fl. N. J. 189; Upham, Fl. Minn. 101; Cov., Fl. Ark. 209?; Gray, Syn. Fl. II, 1, 291; Chap., Fl. S. St. 298.

North America: Ont. and N. Eng. to N. J. and Fla.; W. to Minn., Ill., Ark.? and La.

Minn. valley: Reported from S. E. edge; doubtful or rare; no Minn. specimens seen.

Gerardia auriculata MICHX. Fl. N. Am. II, 20 (1803).

Seymeria auriculata SPRENG. Syst. II, 810 (1825).
Otophylla michauxii BENTH. DC. Prodr. X, 512 (1846).

Wats. and Coult., Gray's Man. 6 ed. 389; Britt., Fl. N. J. 189; Upham, Fl. Minn. 101; Cov., Fl. Ark. 208; Gray, Syn. Fl. II, 1, 292; Engler v. Wetts., Nat. Pflanz. IV, 3 *b*, 93.

North America: Penn. to N. J. and N. Car.; W. to Minn., Mo. and Ark.

Minn. valley: S. central district; infrequent; low or moist ground near bases of hills.

Gerardia aspera DOUGL. Benth. DC. Prodr. X, 520 (1846).

G. longifolia BENTH. Comp. Bot. Mag. I, 208 (1835).

Wats. and Coult., Gray's Man. 6 ed. 390; Webb., Fl. Neb. 136; Mac., Fl. Can. I, 363; Coult., Fl. Colo. 283; Upham, Fl. Minn. 101; Cov., Fl. Ark. 208; Gray, Syn. Fl. II, 1, 292; Engl. v. Wetts., Nat. Pflanz. IV, 3 *b*, 92; Coult., Fl. Tex. 314.

North America: Saskatchewan and Red valleys to Minn., Dak., Neb., Ark. and Tex.; E. to Mich. and Ind.

Minn. valley: N. W. and W.; damp or dry places on prairie.

HERB.: *Taylor 1074½*, Winona lake, Douglas Co.; *Sheldon 1363*, Lake Benton; *Sandberg 410*, Red Wing.

Gerardia purpurea LINN. Spec. 610 (1753) *in part.*

G. maritima var. *major* CHAP. Fl. S. St. 300 (1860).

Wats. and Coult., Gray's Man. 6 ed. 390; Britt., Fl. N. J. 138; Mac., Fl. Can. I, 363; Upham, Fl. Minn. 100; Webb., Fl. Neb. 136; Gray, Syn. Fl. II, 1, 293; Engl. v. Wetts., Nat. Pflanz. IV, 3 *b*, 92; Coult. Fl. Tex. 314.

North America: S. Ont. and N. Eng. to Penn., N. J. and Fla., also in Cuba; W. to Minn., Neb., Miss. and Tex.

Minn. valley: Throughout on higher levels; level ground or hillsides.

HERB.: *Taylor 1038*, Glenwood; *Kassube 169*, Minneapolis; *Herrick 209*, Minneapolis; *Sandberg 409*, Red Wing; the following are var. *paupercula* Gray; *Ballard 844*, Patterson lake, Carver Co.; *Ballard 807*, Goose lake, Carver Co.; *Herb. Sheld. 1659*, Minneapolis.

Gerardia tenuifolia VAHL, Symb. III, 79 (1807).

G. purpurea LINN. Spec. 610 (1753) *in part.*

? *G. erecta* WALT. Fl. Car. 170 (1788).

Wats. and Coult., Gray's Man. 6 ed. 390; Britt., Fl. N. J. 188; Webb., Fl. Neb. 136; Mac., Fl. Can. I, 364, 571; Coult., Fl. Colo. 283; Chap., Fl. S. St. 300; Upham, Fl. Minn. 101; Cov., Fl. Ark. 209; Gray, Syn. Fl. II, 1, 294 and Suppl. Syn. II, 452.

North America: Q., Ont. to Man. and Minn.; S. to N. J. and Fla.; W. to Mich., Neb., Ark. and La.

Minn. valley: Throughout; frequent; woods and hillsides.

HERB.: *Taylor 1066*, Winona lake, Douglas Co.; *Sheldon 1468*, Pipestone City; *Sheldon 1564*, Lake Benton; *Oestlund 121*, Hennepin Co.; *Holzinger 155* Winona Co.; *Herrick 210*, Minneapolis; *Winchell 24*, Richfield; *Sandberg 411*, Goodhue Co.; *Sandberg 412*, Red Wing; *Herb. Sheld. 1667*, Minneapolis; *Herb. Moyer 167*, Chippewa river near Montevideo.

Gerardia tenuifolia VAHL, var. **asperula** GRAY, Bot. Gaz. IV, 153 (1877).

Wats. and Coult., Gray's Man. 6 ed. 390; Gray, Syn. Suppl. II, 452.

North America: Mich. and Ind. to Minn. and Mo.

Minn. valley: Reported from E. edge and S. E. district; dry woods and hills.

CASTILLEJA LINN. f. Suppl. 47 (1781).

Euchroma NUTT. Gen. II, 54 (1818).

Baillon, *Hist. Pl.* IX, 482; Benth. and Hook., *Gen. Pl.* II, 973; Durand, *Ind. Gen. Phan.* 298.

Living species: 35–40; N. and S. America and N. Asia. N. America, 25; California, 12–15; S. Sts., 1; Rocky mts., 10; Canada, 6–7; E. Sts., 3; Pl. Wheel. 7; Pl. King, 5; several sp. in Mexico; only 2 in S. America; 1, Brazil; 1, Andes region; centers in W. N. America; W. Tex., 7.

Castilleja sessiliflora PURSH, Fl. Am. 738 (1814).

Euchroma grandiflora NUTT. Gen. II, 55 (1818).

Castilleja grandiflora SPRENG. Syst. II, 775 (1825).

Wats. and Coult., Gray's Man. 6 ed. 391; Mac., Fl. Can. I, 366; Upham, Fl. Minn. 101; Coult., Fl. Colo. 285; Wats., King. Exp. 457; Gray, Syn. Fl. II, 1, 298 and Suppl. Syn. II, 452; Coult., Fl. Tex. 316.

North America: Assiniboia to Wisc., Minn., Ill., Dak., Tex., N. Mex. and Mexico; W. to Mont. and Calif. (S. region).

Minn. valley: Prairie district, especially W.; high sterile knolls and edges.

HERB.: *Sheldon 1301*, Lake Benton; *Taylor 831*. Glenwood; *Sandberg 415*, Goodhue Co.; *Leiberg 46*, "Minnesota;" *Herb. Wickersheim 92*, Idlewild, Lincoln Co.; *Herb. Moyer 168*, Montevideo.

Castilleja pallida (LINN.) KUNTH, var. **acuminata** (PURSH).

Bartsia acuminata PURSH, Fl. Am. 429 (1814).

Castilleja acuminata SPRENG. Syst. II, 774 (1825).

C. septentrionalis LINDL. Bot. Reg. 925 (1836–46).

C. pallida var. *septentrionalis* GRAY, Bot. Calif. I, 573 (1876).

Wats. and Coult., Gray's Man. 6 ed. 391; Mac., Fl. Can. I, 365, 572; Upham, Fl. Minn. 101; Coult., Fl. Colo. 284; Gray, Syn. Fl. II, 1, 297; Nym., Fl. Eur. (spec.); Trautv., Fl. Sib. (spec.) 89; Led., Fl. Ross. (spec.) III, 257;

Herd., Fl. Eur. Russ. (spec.) 96; Roth., Wheel. Exp. 7, 216; Wats., King Exp. 229, 456.

The species ranges through Siberia and N. Europe.

North America: N. Br., Q., Ont. to Arctic sea, Rockies and Oregon; S. to N. Eng. mts.; S. to Dak., Minn., Mont.; S. in Rockies to Colo. and Utah.

Minn. valley: Reported from Leaf hills district; rare or doubtful; high, sterile knolls.

Castilleja coccinea (LINN.) SPRENG. Syst. II, 775 (1825).

Bartsia coccinea LINN. Spec. 602 (1753).

Euchroma coccinea NUTT. Gen. II, 55 (1818).

Wats. and Coult., Gray's Man. 6 ed. 390; Britt., Fl. N. J. 189; Mac., Fl. Can. I, 364; Upham, Fl. Minn. 101; Wats., King Exp. 456; Cov., Fl. Ark. 209; Gray, Syn. Fl. II, 1, 295; Coult., Fl. Tex. 315.

North America: Ont., Gt. lakes to Man. and Minn.; S. to Maine, N. J., Tenn. and W. to Ark. and Tex.

Minn. valley: Forest district; rare W. of this region; openings in woodland.

HERB.: *Taylor 345*, Janesville; *Ballard 257*, Jordan, Scott Co.; *Sheldon 514*, Waseca; *Ballard 462*, Prior's lake, Scott Co.; *Sandberg 413*, Red Wing; *Sandberg 414*, Cannon Falls; *Oestlund 122*, Ramsey Co.; *Kassube 170*, Minneapolis; *Holzinger 156*, Winona Co.; *Herrick 212*, St. Louis river; *Bailey 302*, St. Louis river; *Herrick 213*, Minneapolis; *Hammond 26*, Lake City; *Herb. Sheld. 1722*, Minneapolis; *Herb. Sheld. 1761*, Ramsey Co.

PEDICULARIS LINN. Gen. 513 (1737).

Baillon, *Hist. Pl.* IX, 477; Benth. and Hook., *Gen. Pl.* II, 978; Durand, *Ind. Gen. Phan.* 299.

Living species: 135±; Europe; temperate and N. Asia; N. America; East Indies. Russia, 60; Europe, 45; Russian Europe, 18; N. America, 30; Canada, 19; E. Sts., 3; California, 6; Pl, Wheel., 6; Pl. King, 3; Rocky mts., 8; S. Sts., 2.

Pedicularis lanceolata MICHX. Fl. N. Am. II, 18 (1803).

P. virginica POIR. Enc. Meth. V, 126 (1804).

P. pallida and *resupinata* PURSH, Fl. Am. 424 (1814).

P. auriculata SM. ex Benth. DC. Prodr. x, 577 (1846).

Wats. and Coult., Gray's Man. 6 ed. 393; Britt., Fl. N. J. 190; Upham, Fl. Minn. 102; Mac., Fl. Can. I, 369, 572: Chap., Fl S. St. 301; Gray, Syn. Fl. II, 1, 307.

North America: Ont. to Man., Minn., Neb.; S. to Conn., N. J., Va. and N. Car?; W. to Iowa and Mo.

Minn. valley: Throughout, especially W. and S. W. districts; marshes and swamps.

HERB.: *Taylor 958,* Glenwood; *Sheldon 1036,* Sleepy Eye; *Taylor 1022,* Glenwood; *Sheldon 1523,* Lake Benton; *Sheldon 1314,* Verdi, Lincoln Co.; *Kassube 172,* Minneapolis; *Holzinger 157,* Winona Co.; *Leiberg 47,* Blue Earth Co.; *Oestlund 124,* Minneapolis; *Sandberg 417,* Red Wing; *Herb. Sheld. 1669,* Minneapolis.

Pedicularis canadensis LINN. Mant. 86 (1767).

P. gladiata MICHX. Fl. N. Am. II, 18 (1803).
P. aequinoctialis HBK. N. Gen. et Spec. II, 332 (1817).

Wats. and Coult., Gray's Man. 6 ed. 392; Britt., Fl. N. J. 189; Mac., Fl. Can. I, 369, 572; Cov., Fl. Ark. 209; Upham, Fl. Minn. 102; Coult., Fl. Colo. 287; Chap., Fl. S. St. 301; Gray, Syn. Fl. II, 1, 307; Webb., Appx. Neb. 38.

North America: N. S., N. Br., Q., Ont. to Man. and Saskatchewan; S. to N. Eng., N. J. and Fla.; W. to Minn., Dak., Neb., Colo. in mts.; S. to Ark. and Mexico.

Minn. valley: Throughout; frequent; banks of streams and edges of copses or woods.

HERB.: *Sheldon 1313,* Lake Benton; *Sheldon 523,* Waseca; *Sheldon 650,* Wilton, Waseca Co.; *Taylor 113,* Janesville; *Taylor 113a,* Janesville; *Taylor 769,* Glenwood; *Oestlund 123,* Minneapolis; *Herrick 214,* Minneapolis; *Kassube 171,* Minneapolis; *Sandberg 416,* Cannon Falls; *Herb. Sheld. 1712,* Ramsey Co.; *Herb. Sheld. 1906,* Minneapolis; *Herb. Wickersheim 93,* Mankato; *Herb. Moyer 169,* Black Oak, Chippewa Co.

MELAMPYRUM LINN. Gen. 507 (1737).

Baillon, *Hist. Pl.* IX, 483; Benth. and Hook., *Gen. Plant.* II, 679; Durand. *Ind. Gen. Phan.* 299.

Living species: 10; Europe; most Asia; 1 sp. N. America. Russia, 6; Japan, 2; Europe, 6.

Melampyrum lineare LAM. Enc. Meth. IV, 23 (1797).

M. americanum MICHX. Fl. N. Am. II, 16 (1803).
M. latifolium MUHL. Cat. (1813).
M. brachiatum SCHWEIN. Keat. Narr. 115 (1825).
M. sylvaticum HOOK. Fl. Bor.-Am. II, 106 (1840).
M. pratense var. *americanum* BENTH. DC. Prodr. X, 584 (1846).

Wats. and Coult., Gray's Man. 6 ed. 393; Britt., Fl. N. J. 190; Mac., Fl. Can. I, 372; Upham, Fl. Minn. 102; Chap., Fl. S. St. 302; Gray, Syn. Fl. II, 1, 310; Cov., Fl. Ark. 209.

North America: Anticosti, N. S., N. Br., Q., Ont. to Coast range, Brit. Col.; S. to Minn., Iowa and Ark.; E. to Atl. and mts. of Ga.

Minn. valley: Forest district; rare or local; rich woods along streams or near lakes.

HERB.: *Bailey 193*, Vermilion lake; *Roberts 99*, Duluth; *Roberts 100*, Minnesota Point.

MONNIERA P. BR. Hist. Jam. (1756).

Bramia LAM. Enc. Meth. I, 459 (1783).

Mella VAND. Lusit. Fl. 43 (1788).

Septas LOUR. Cochinch. 392 (1790).

Heptas MEISSN. Gen. Pl. 293 (1836).

Mecardonia and **Calytriplex** R. and P. Prodr. Per. 95, 96 (1794).

Caconapea and **Ranaria** CHAM. Linn. VIII, 28, 30 (1834).

Cardiolophus GRIFF. Notul. IV, 105 (1851).

Anisocalyx HANCE, Walp. Ann. III, 195 (1854).

Herpestis GAERTN. Fruct. III, 186 (1805).

Ranapalus KELL. Cal. Acad. Sci. VII, 113 (1886).

Baillon, *Hist. Pl.* IX, 449; Benth. and Hook., *Gen. Pl.* II, 951; Durand, *Ind. Gen. Phan.* 295; O. Kuntze, *Rev. Gen.* II, 462.

Living species: 50±; tropical and subtropical regions and extra-tropical in N. America and Chile. N. America, 6–7; S. Sts., 5–6; E. Tex., 2; California, 1; W. Tex., 4.

Monniera rotundifolia MICHX. Fl. N. Am. II, 22 (1803).

Herpestis rotundifolia PURSH, Fl. Am. 418 (1814).

Ranapalus eiseni KELL. Proc. Acad. Calif. VII, 113 (1886).

Wats. and Coult., Gray's Man. 6 ed. 384; Chap., Suppl. S. St. 635; Gray, Syn. Fl. II, 1, 280; Suppl. Syn. II, 451; Coult., Fl. Tex. 310.

North America: Ill., Minn. and Mo. to Tenn., Tex., S. Car. and Ga.? Fresno Co., Calif.; Dak.

Minn. valley: Local in Lac Qui Parle Co.; wet places in prairies.

HERB.: *Moyer 3*, Cerro Gordo, Lac Qui Parle Co.; *Herb. Moyer 170*, Cerro Gordo, Lac Qui Parle Co.

XCVII. LENTIBULARIACEAE. Bladderwort Family.

Lindl., *Veg. King.* 686 (1846); Endlicher, *Gen. Pl.* 728 (1836–40); Bentham and Hooker, *Gen. Pl.* II, 986 (1876); Baillon, *Hist. Pl.* XI, 347, *Utriculariaceae* (1892).

Genera: 4; temperate and tropical regions; except in arid districts.

Species: 200±; 160±, in *Utricularia* alone.

UTRICULARIA LINN. Gen. 15 (1737).

Lentibularia VAILL. ex Durand l. c. (1888).

Akentra BENJ. Linn. XX, 319 (1846).

Diurospermum EDJW. Proc. Linn. Soc. 351 (1847).

Benth. and Hook., *Gen. Pl.* II, 987; Durand, *Ind. Gen. Phan.* 300; Baillon, *Hist. Pl.* XI, 352.

Living species: 160±; temperate and warmer regions; N. America, 15; Canada, 8; Rocky mts., 3; E. Sts., 12; S. Sts., 10; California, 3–4; Pl. King, 2; W. Texas, 6; Europe, 5; Russia, 3–4.

Utricularia cornuta MICHX. Fl. N. Am. I, 12 (1803).

U. personata LE CONTE, Ann. Lyc. N. Y. I, 73 (1824).

Wats. and Coult., Gray's Man. 6 ed. 397; Britt., Fl. N. J. 192; Mac., Fl. Can. I, 376; Upham, Fl. Minn. 98; Chap., Fl. S. St. 283; Gray, Syn. Fl. II, 1, 317 and Suppl. II, 455; Coult., Fl. Tex. 317.

Cuba and Brazil.

North America: Newf., Anticosti, N. S. to L. Superior reg. and Minn.; S. to N. J. and Fla.; W. to Iowa and Tex.

Minn. valley: Reported from N. E. district and N. edge; forest pools or lakes; floating or rooting in the mud.

Utricularia intermedia HAYNE, Schrad. Journ. I, 18 (1799).

U. millefolium NUTT. ex TORR. Fl. N. Y. II, 21 (1843).

Wats. and Coult., Gray's Man. 6 ed. 397; Britt., Fl. N. J. 191; Upham, Fl. Minn. 98; Mac., Fl. Can. I, 375, 573; Forbes and Hems., Fl. Sin. II, 223; Led., Fl. Ross. III, 2; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 312; Herd., Fl. Eur. Russ. 84; Gray, Syn. Fl. II, 1, 316; Hart., Fl. Scand. I, 123.

Northern Europe to Alps; N. Asia to Japan and China.

North America: Newf., Anticosti, N. S., N. Br., Ont. to S. Man., Brit. Col., Selkirks and Rockies; S. to Plumas Co., Calif.; S. to N. Eng. and N. J., and to Minn. and Iowa.

Minn. valley: S. and S. W. districts; rare; perhaps throughout forest district; floating on pools and lakes.

HERB.: *Sheldon 101*, Lake Custan, Le Sueur Co.

Utricularia minor LINN. Spec. 18 (1753).

U. estacea HOOK. Fl. Bor.-Am. II, 118 (1840).

Wats. and Coult., Gray's Man. 6 ed. 396; Coult., Fl. Colo 290; Webb., Fl. Neb. 138; Upham, Fl. Minn. 98; Brew. and Wats., Fl. Calif. I, 586: Mac., Fl. Can. I, 375, II, 348; Led., Fl. Ross. III, 2; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 312; Herd., Fl. Eur. Russ. 84; Wats., King Exp. 215; Gray, Syn. Fl. II, 315 and Suppl. Syn. II, 455; Hart., Fl. Scand. I, 123.

Europe, except Spain, Greece and Turkey; N. Africa; N. Asia to Ural and Altai Sib.

North America: Greenland to Saskatchewan, Brit. Col. and Prince Edward Isl.; S. in mts. to Nev. and Utah; S. to E. Mass. and N. J.; W. to Minn., Neb. and Ark.

Minn. valley: Forest district; infrequent; floating on quiet pools and lakes.

HERB.: *Roberts 94*, Duluth.

Utricularia vulgaris LINN. Spec. 18 (1753).

Wats. and Coult., Gray's Man. 6 ed. 396; Britt., Fl. N. J. 191; Upham,

Fl. Minn. 98; Webb., Fl. Neb. 138; Chap., Fl. S. St. 282; Coult., Fl. Colo. 290; Mac., Fl. Can. I, 375; Brew. and Wats., Fl. Calif. I, 586; Hook., Fl. Gt. Brit. 312; Nym. Fl. Eur.; Led., Fl. Ross. III, 1; Herd., Fl. Eur. Russ. 84; Wats., King Exp. 214; Cov., Fl. Ark 209; Gray, Syn. Fl. II, 315; Hart., Fl. Scand. I, 122; Coult., Fl. Tex. 317.

Most Europe; Russia; Siberia; Dahuria; N. Africa.

North America: Atl. to Pac. in Can. and far N. on Mackenzie; S. in Sierra Nevada to Calif.; in Rockies to N. Mex. and Tex.; E. throughout U. S.

Minn. valley: Forest district and perhaps throughout; floating on still pools or lakes.

HERB.: *Ballard 679*, Waconia; *Ballard 435*, Prior's lake, Scott Co.; *Ballard 810*, Page lake, Carver Co.; *Holzinger 143*, Winona Co.; *Sandberg 396*, Vasa; *Oestlund 114*, Minneapolis; *Roberts 93*, Stuart river; *Arthur 62*, Vermilion lake; *Reed 1*, Dakota Co.; *Sheldon 346*, Smith's Mill, Blue Earth Co.

XCVIII. OROBANCHACEAE. Broom-Rape Family.

Endlicher, *Gen. Pl.* 725 (1836–40); Bentham and Hooker, *Gen. Plant.* II, 980 (1876).

Genera: 11-12; extra-tropical regions and a few within the tropics.

Species: 175±; Europe, N. Africa, Asia and America.

APHYLLON MITCH. Act. Phys. Med. Cur. VIII, 221 (1748).

Gymnocaulis NUTT. Gen. II, 59 (1818).
Anoplanthus ENDL. p. p. Gen. 727 (1840).
Anoplon WALLR. ex Durand, l. c. (1888).
Phillipoea REUT. DC. Prodr. XI, 11 (1849) *Amer. Spec.*
Myzorhiza PHILLIPI. Linn. XXIX, 36 (1855).

Benth. and Hook., *Gen. Pl.* II, 983; Durand, *Ind. Gen. Phan.* 300.

Living species: N. America to Mexico, 10; Canada, 5; California, 6-7; S. Sts., 1; Rocky mts., 4; Pl. King, 2; Wheel.; 2; E. Sts., 3; W. Tex., 3.

Aphyllon ludovicianum (NUTT.) GRAY, Bot. Calif. I, 584 (1876).

Orobanche ludoviciana NUTT. Gen. II. 58 (1818).
Phelipoea ludoviciana WALP. Rep. III, 480 (1844-1845).

Wats. and Coult., Gray's Man. 6 ed. 395; Webb., Fl. Neb. 137; Upham, Fl. Minn. 98; Mac., Fl. Can. I, 373; Coult., Fl. Colo., 289; Gray, Syn. Fl. II, 1, 313 and Suppl. Syn. II, 455; Coult., Fl. Tex. 316.

North America: Saskatchewan, Assiniboia, Brit. Col., Vancouver; S. to Calif., N. Mex., Arizona and Tex.; E. to Minn. and Ill.

Minn. valley: Local in Nicollet Co.; root-parasitic in sandy ground.

Aphyllon fasciculatum (NUTT.) GRAY, Man. ed. 1, 290 (1848).

Orobanche fasciculata NUTT. Gen. II, 59 (1818).
Phelipoea fasciculata SPRENG. Syst. II, 218 (1825).
Anoplanthus fasciculatus WALP. Rep. III, 480 (1844-1845).

Wats. and Coult., Gray's Man. 6 ed. 395; Coult., Fl. Colo. 289; Upham, Fl. Minn. 98; Webb., Fl. Neb. 138; Brew. and Wats., Fl. Calif. I, 584; Roth., Wheel, Exp. 176, 217; Wats., King Exp. 215; Gray, Syn. Fl. II, 1, 312.

North America: Assiniboia to Brit. Col.; S. to Calif. and Arizona; E. to Minn., Mich. and Neb.

Minn. valley: S. W. districts; rooting on shrubs and herbs along ledges of granite; rare.

Aphyllon uniflorum (LINN.) GRAY, Man. ed. 1, 290 (1848).

Orobanche uniflora LINN. Spec. 882 (1753).
O. biflora NUTT. Gen. II, 59 (1818).

Wats. and Coult., Gray's Man. 6 ed. 394; Britt., Fl. N. J. 190; Webb., Fl. Neb. 138; Coult., Fl. Colo. 289; Mac., Fl. Can. I, 372; Chap., Fl. S. St. 287; Brew. and Wats., Fl. Calif. I, 584; Wats., King Exp. 215; Cov., Fl. Ark. 209; Gray, Syn. Fl. II, 1, 312; Coult., Fl. Tex. 316.

North America: Newf., N. Br., Ont., L. Superior reg., Brit. Col. to Vancouver; S. to N. Eng., N. J., Va. and Fla., W. to Minn., Neb. and Tex.; Pac. region to Calif.

Minn. valley: N. E. district; woods; rare; a root-parasite.

HERB.: *Kassube 159,* Minneapolis.

XCIX. PLANTAGINACEAE. Plantain Family.

Endlicher, *Gen. Pl.* 346 (1836-40); Bentham and Hooker, *Gen. Plant.* II, 1223 (1876); Baillon, *Hist. Pl.* IX, 274 (1888).

Genera: 3; cosmopolitan.

Species: 150-175; all but two in *Plantago.*

PLANTAGO LINN. Gen. 77 (1737).

Benth. and Hook., *Gen. Pl.* II, 1224; Durand, *Ind. Gen. Phan.* 330; Baillon, *Hist. Pl.* IX, 279.

Living species: 200+ described; to be reduced; cosmopolitan. Europe, 43; Russia, 27; European Russia, 10; N. America, 15; S. Sts., 10; Rocky mts., 4-5; E. Sts., 10; Canada, 11-12; Calif. and Pac. coast, 10; Pl. King, 4; Pl. Wheel., 2; W. Tex., 5.

Plantago patagonica JACQ. var. **gnaphalioides** (NUTT.) GRAY, Syn. Fl. II, 1, 391 (1886).

P. gnaphalioides NUTT. Gen. I, 100 (1818).
P. lagopus PURSH, Fl. 99 (1814) *not Linn.*
P. purshii R. and S. Syst. III, 120 (1818).
P. hookeriana F. and M. Ind. Sem. Petrop. (1838).

Wats. and Coult., Gray's Man. 6 ed. 424; Mac., Fl. Can. I, 393; Webb., Fl. Neb. 140; Upham, Fl. Minn. 96; Coult., Fl. Colo. 300; Brew. and Wats., Fl. Calif. I, 611 (spec.); Roth., Wheel. Exp. 225; Wats., King Exp. 213: Cov., Fl. Ark. 213; Gray, Syn. Fl. II, 1, 391; Coult., Fl. Tex. 344.

North America: Saskatchewan, Assiniboia to S. Brit. Col.; S. to Calif. and Tex.; E. to Neb., Ark., Ind., Minn. and Ky.

Minn. valley: Prairie districts especially in rocky regions; on high, sterile knolls or ledges.

HERB.: *Sheldon 436,* Smith's Mills, Blue Earth Co.; *Sheldon 214,* New Ulm; *Ballard 241,* Jordan, Scott Co.; *Taylor 177,* Janesville; *Sheldon 1445,* Pipestone City; *Leiberg 49,* Blue Earth Co.: *Leiberg 50,* Blue Earth Co.; *Herb. Moyer 177,* Rock Cut, near Montevideo.

Plantago rugelii DECN. DC. Prodr. XIII, 695 (1849).
P. major ELL. Sk. I, 201 (1821).
P. kamtschatica HOOK. Comp. Bot. Mag. II, 61 (1835).

Wats. and Coult., Gray's Man. 6 ed. 423; Britt., Fl. N. J. 203; Upham, Fl. Minn. 96; Webb., Fl. Neb. 140; Mac., Fl. Can. I, 392, 574; Chap., Fl. S. St. 277; Cov., Fl. Ark. 213; Gray, Syn. Fl. II, 1, 390; Coult , Fl. Tex. 344.

North America: Q., Ont. to Vt., Minn. and Neb.; S. to Ga., Ark. and Tex.

Minn. valley: Forest district and N. W.; banks of streams and lakes.

HERB.: *Ballard 270,* Jordan, Scott Co.; *Herrick 219,* Minneapolis; *Leiberg 48,* Blue Earth Co.

Plantago major LINN. Spec. 113 (1753).
P. major var. *minima* DECN. DC. Prodr. XIII, 695 (1849).

Wats. and Coult., Gray's Man. 6 ed. 423; Britt., Fl. N. J. 203; Coult., Fl. Colo. 299; Upham, Fl. Minn. 96; Webb., Fl. Neb. 140; Chap., Fl. S. St. 277; Brew. and Wats., Fl. Calif. I, 611; Mac., Fl. Can. I, 391; Led., Fl. Ross. III, 476; Hook., Fl. Gt. Brit. 288; Nym., Fl. Eur.; Griseb., Fl. W. I; Miyabe, Fl. Kur. 256 *in var.*; Herd., Fl. Eur. Russ. 106; Roth., Wheel. Exp. 225; Cov., Fl. Ark. 213; Gray, Syn. Fl. II, 1, 389; Hart., Fl. Scand. I, 132; Coult Fl. Tex. 344.

N. Africa; Europe; N. and W. Asia to China?.

North America: L. Superior to Brit. Col.; S. to Minn. and Oregon; intro. from W. Europe in E. U. S. and adventive also in W. Indies, Brazilian and other S. American ports.

Minn. valley: Throughout; moist soil, door-yards, roadsides and edges of streams.

HERB.: *Sheldon 875*, Sleepy Eye; *Taylor 367½*, Janesville; *Taylor 691*, Minnesota lake; *Taylor 164*, Janesville; *Ballard 513*, Prior's lake, Scott Co.; *Sheldon 873*, Sleepy Eye; *Ballard 681*, Waconia. (The last two are perhaps var. *asiatica Decn.*); *Oestlund 230*, Hennepin Co.; *Sandberg 422*, Cannon Falls; *Oestlund 131*, Minneapolis; *Bailey 258a*, St. Louis river; *Sandberg 423*, Goodhue Co.; *Ballard 998*, St. Paul; *Herb. Sheld. 187*, Minneapolis; *Herb. Moyer 176*, Montevideo.

C. RUBIACEAE. Madder Family.

Endlicher, *Gen. Pl.* 520 (1836-40); Lindl., *Veg. King.* 761 (1846)—*Cinchonaceae;* Lindl., l. c. 768 (1846)—*Galiaceae;* Bentham and Hooker, *Gen. Plant.* II, 7 (1873); Baillon, *Hist. Pl.* VII, 257 (1880); Schumann *in Engler and Prantl, Nat. Pflanz.* IV, 4, 1 (1891).

Genera: 300±; tropical regions; sparingly in temperate zones; N. rather than S. and particularly in W. hemisphere; 343 gen. (*Schumann*); 197 (*Baillon*); 337 (*B.* and *H.*).

Species: 4500±, a few temperate or circumpolar.

HOUSTONIA LINN. Gen. 70 (1737).

Baillon, *Hist. Pl.* VII, 326 (*sub Oldenlandia* Linn.); Benth. and Hook., *Gen. Pl.* II, 60; Durand, *Ind. Gen. Phan.* 174; Engler and Prantl, *Nat. Pflanz.* IV, 4, 27 (Schumann).

Living species: 20±; W. N. America and Mexico. E. Sts., 6-7; S. Sts. 6; W. Tex., 10.

Houstonia purpurea LINN. var. **ciliolata** (TORR.) GRAY, Man. 5 ed. 212 (1867).

H. ciliolata TORR. Fl. U. S. I, 174 (1824).

Hedyotis ciliolata TORR. Spreng. Syst. Cur. Post. 40 (1827).

Wats. and Coult., Gray's Man. 6 ed. 223; Mac., Fl. Can. I, 199; Upham, Fl. Minn. 68; Gray, Syn. Fl. I, 2, 26; Coult., Fl. Tex. 159?

North America: Ont., Niagara river and L. Huron to Minn. and Ky.

Minn. valley: Reported from N. edge; infrequent; woods and banks.

HERB.: ? *Sandberg 264*, Moose lake; *Sandberg 265*, N. Pac. Junction.

Houstonia purpurea LINN. var. **longifolia** (GAERTN.) GRAY, Man. 5 ed. 212 (1867).

H. longifolia GAERTN. Fruct. I, 226 (1788).

H. angustifolia PURSH, Fl. Am. 106 (1814) *in part.*

Hedyotis longifolia HOOK. Fl. Bor.-Am. I, 286 (1833).

Oldenlandia purpurea var. *longifolia* CHAPM. Fl. S. St. 2 ed. 181 (1887).

Wats. and Coult., Gray's Man. 6 ed. 223; Britt., Fl. N. J. 125; Mac., Fl.

Can. I, 200, 540; Upham, Fl. Minn. 67; Cov., Fl. Ark. 188; Engl. Schumann, Nat. Pflanz. IV, 4, 27; Gray, Syn. Fl. I, 2, 26; Coult., Fl. Tex. 159?.

North America: Ont. to Man. and Assiniboia.; N. W. T.; S. to Maine, N. J, and Ga.; W. to Minn., Mo., Ark. and Tex.

Minn. valley: Throughout; woods and banks of streams.

HERB.: *Sheldon 1222*, Red Stone, near New Ulm; *Ballard 279*, Jordan, Scott Co.; *Bailey 474*, Agate bay; *Gedge 6*, Granite Falls; *Roberts 56*, Kettle river; *Sheldon 1622*, Taylor's Falls; *MacM.* and *Sheld. 20*, Brainerd, *Herb. Moyer 104*, Granite Falls; *105*, Montevideo.

GALIUM LINN. Gen. 65 (1737).

Aparine LINN. Gen. 64 (1737).

Microphysa SCHRENK. Bull. Acad. Petr. II, 115 (1860).

Baillon, *Hist. Pl.* VII, 259 (*sub Rubia* Linn.); Benth. and Hook., *Gen. Pl.* II, 149; Durand, *Ind. Gen. Phan.* 186; Schenck, *Palaeophyt.* 785.

Living species: 300 described; 175 distinct. Russia, 50; Europe, 100; Russian Europe, 20; North America, 35; Canada, 15; Rocky mts., 6–7; S. Sts., 9; California, 13; E. Sts., 13; Pl. King, 8; Pl. Wheel., 4; W. Tex., 9; all temperate and warmer regions.

Fossil species: 1; Greenland, Tertiary (*Heer*).

Galium triflorum MICHX. Fl. N. Am. I, 80 (1803).

G. suaveolens WAHL. Fl. Lapp. 48 (1812).

G. cuspidatum MUHL. Cat. 15 (1813).

G. brachiatum PURSH, Fl. Am. 103 (1814).

G. pennsylvanicum BART. Fl. Phil. 83 (1818).

Wats. and Coult., Gray's Man. 6 ed. 227; Britt., Fl. N. J. 126; Mac., Fl. Can. I, 202; Chap., Fl. S. St. 174; Coult., Fl. Colo. 127; Webb., Fl. Neb. 142; Wats., Fl. Calif. II, 284; Upham, Fl. Minn. 67; Nym., Fl. Eur.; Led., Fl. Ross. II, 413; Herd., Fl. Eur. Russ. 62; Wats., King. Exp. 135; Cov, Fl. Ark. 188; Gray, Syn. Fl. I, 2, 39; Hart., Fl. Scand. I, 65.

Europe; Asia to Japan.

North America: Atl. to Pac. in Can.; to lat. 58° N. on Peace river; S. to N. Eng., Fla. and Miss.; W. to Minn., Neb., Colo. and Calif.

Minn. valley: Throughout; woods and along river banks; rare far W.; rich woods.

HERB.: *Ballard 332*, Belle Plaine; *Ballard 699*, Waconia; *Taylor 822*, Glenwood; *Taylor 237*, Janesville; *Sheldon 234*, Lake Washington, Le Sueur Co.; *Sheldon 809*, Sigel township, Brown Co.; *Oestlund 82*, Hennepin Co.; *Bailey 330*, St. Louis river; *Bailey 210*, Vermilion lake; *Bailey 505*, Agate bay; *Roberts 55*, Duluth; *Bailey 44*, Vermilion lake; *Sundberg 261*, Chisago Co.

Galium asprellum Michx. Fl. N. Am. I, 78 (1803).

G. pennsylvanicum Muhl. Cat. 15 (1813).

G. spinulosum Raf. Prec. Decouv. 40 (1814).

G. micranthum Pursh, Fl. Am. 103 (1814) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 227; Britt., Fl. N. J. 126; Mac., Fl. Can. I, 201; Webb., Fl. Neb. 142; Upham, Fl. Minn. 67; Trautv., Fl. Sib. 63 *in var.*; Forbes and Hems., Fl. Sin. 393; Gray, Syn. Fl. I, 2, 39.

E. Sib.; Japan; Manchuria.

North America: N. S., N. Br., Q., Ont. to N. Eng., N. J. and N. Car.; W. to Man., Minn., Neb. and Mo.

Minn. valley: Throughout; damp thickets or edges of wooded swamps.

Herb.: *Taylor 234,* Janesville; *Arthur 72,* Vermilion lake; *Sandberg 258,* Goodhue Co.; *Herrick 133,* Minneapolis; *Bailey 356,* Mud river.

Galium concinnum T. and G. Fl. II, 23 (1841).

? G. parviflorum Raf. Med. Repos. V, 360 (1808).

Wats. and Coult., Gray's Man. 6 ed. 227; Britt., Fl. N. J. 126; Upham, Fl. Minn. 67; Webb., Fl. Neb. 142; Cov., Fl. Ark. 188; Gray, Syn. Fl. I, 2, 38.

North America: N. J., Penn. to Va.; W. to Minn., Neb. and Ark.

Minn. valley: Forest district to Cottonwood valley and N. W. district; dry places in woods or thickets.

Herb.: *Taylor 626,* Minnesota lake; *Sheldon 241,* Turtle lake, Le Sueur Co.; *Ballard 299,* Jordan, Scott Co,; *Sheldon 651,* Waseca; *Ballard 236,* Jordan, Scott Co.; *Taylor 439,* Janesville; *Sheldon 296,* Madison Lake; *Sheldon 747,* Sleepy Eye; *Herrick 134,* Minneapolis.

Galium trifidum Linn. Spec. 105 (1753).

G. tinctorium Linn. Spec. 106 (1753).

G. claytoni Michx. Fl. I, 78 (1803).

Wats. and Coult., Gray's Man. 6 ed. 227; Britt., Fl. N. J. 126; Upham, Fl. Minn. 67; Mac., Fl. Can. I, 201, 540; Coult., Fl. Colo. 128; Wats., Fl. Calif. II, 284; Chap., Fl. S. St. 174; Webb., Fl. Neb. 142; Nym., Fl. Eur.; Led., Fl. Ross. II, 409; Herd., Fl. Eur. Russ. 62; Wats., King Exp. 135; Roth., Wheel. Exp. 138; Cov., Fl. Ark. 188; Gray, Syn. Fl. I, 2, 38; Hart., Fl. Scand. I, 65; Coult., Fl. Tex. 162.

Europe; Siberia, Dahuria and Japan.

North America: Atl. to Pac. in Can. and N. to 68° N. lat.; throughout U. S. to Fla., Tex. and Arizona; Alaska and Aleutian Islands.

Minn. valley: Throughout; swamps and wet woodland regions.

Herb.: *Taylor 1037,* Glenwood; *Ballard 800,* Goose lake, Carver Co.; *Ballard 674,* Waconia; *Sheldon 338,* Smith's

Mills, Blue Earth Co.; *Ballard 66*, Chaska; *Taylor 124*, Janesville; *Taylor 146a*, Janesville; *Sheldon 524*, Waseca; *Sheldon 291*, Madison Lake; *Sheldon 245*, Turtle lake, Le Sueur Co.; *Sheldon 31*, Elysian; *Leonard 21*, Spring Valley; *Sandberg 259*, Red Wing; *Kassube 118*, St. Anthony; *Bailey 297*, St. Louis river; *Holzinger 105*, Winona Co.; *Bailey 73*, Vermilion lake; *Herrick 135*, Minneapolis; *Bailey 275*, St. Louis river; *Sandberg 260*, Goodhue Co.; *Herb. Sheld. 1713*, Minneapolis; *1762*, Ft. Snelling.

Galium trifidum var. **latifolium** TORR. Fl. U. S. 165 (1824).

G. obtusum BIGEL. Fl. Bost. ed. II, 55 (1824).

G. trifidum LINN. var. *obtusum* (BIGEL.) MacM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 227; Britt., Fl. N. J. 126; Webb., Fl. Neb. 142; Mac., Fl. Can. I, 201; Chap., Fl. S. St. 174; Upham, Fl. Minn. 67; Gray, Syn. Fl. I, 2, 38; Coult., Fl. Tex. 162.

North America: N. Br., Q., Ont. to N. J. and Fla.; W. to Minn., Dak, Neb., Colo. and Tex.

Minn. valley: N. E. and N. W. districts; local; swampy ground and wooded marshes.

HERB.: *Taylor 996*, Glenwood; *Ballard 84*, Chaska, and *165*, Chaska.

Galium boreale LINN. Spec. 108 (1753).

G. bermudianum MUHL. Cat. (1813).

G. septentrionale R. and S. Syst. III, 253 (1818).

G. strictum TORR. Pl. N. Y. 23 (1819).

G. rubioides Auct. Amer.

Wats. and Coult., Gray's Man. 6 ed. 227; Mac., Fl. Can. I, 203; Britt., Fl. N. J. 127; Hook., Fl. Gt. Brit. 194; Wats., Fl. Calif. II, 285; Webb., Fl. Neb. 142; Upham, Fl. Minn. 67; Coult., Fl. Colo. 127; Trautv., Fl. Sib. 64?; Led., Fl. Ross. II, 412; Nym., Fl. Eur.; Forbes and Hems., Fl. Sin. 393; Herd., Fl. Eur. Russ. 62; Roth., Wheel. Exp. 138; Wats., King Exp. 136; Gray, Syn. Fl. I, 2, 38; Hart., Fl. Scand. I, 65.

N. and C. Europe to Bosnia; Russ. to Caucasus; Siberia, Dahuria and China.

North America: Q., Ont. to Rockies and 68° N. lat.; S. to Maine, N. J. and Penn.; W. to Minn., Neb., Mont., Colo., N. Mexico, Calif., Oregon and along Pac. coast to Sitka.

Minn. valley: Throughout; abundant; banks of streams and shores of lakes.

HERB.: *Sheldon 1291*, Lake Benton; *Ballard 108*, Carver; *Ballard 422*, New Prague, Scott Co.; *Sheldon 227*, Lake Washington, Le Sueur Co.; *Sheldon 277*, Madison Lake; *Sheldon 743*, Sleepy Eye; *Taylor 84*, Elysian; *Taylor 235*, Janesville; *Taylor 576*, Minnesota lake; *Taylor 116*, Janesville; *Taylor 867*, Glenwood; *Sheldon 1179*, New Ulm; *Leonard 22*, Wikoff; *Leonard 23*, Minneapolis; *Holzinger 106*, Winona Co.; *Kassube*

119, Minneapolis; *Holzinger 107,* Winona Co.; *Sandberg 263,* Red Wing; *Hammond 22,* Lake City; *Herb. Sheld. 1769,* Ft. Snelling; *Herb. Moyer 103,* Montevideo.

Galium lanceolatum TORR. Fl. U. S. 168 (1824).

G. torreyi BIGEL. Fl. Bost. 2 ed. 56 (1824).

G. circaezans var. *lanceolatum* T. and G. Fl. II, 24 (1841).

Wats. and Coult., Gray's Man. 6 ed. 226; Britt., Fl. N. J. 127; Mac., Fl. Can. I, 202; Upham, Fl. Minn. 67; Chap., Fl. S. St. 174; Gray, Syn. Fl. I, 2, 37.

North America: Q., Ont., N. Eng. to N. J., Penn., N. Car. and Tenn.; W. to Minn. and Neb.

Minn. valley: Reported from E. edge; rare; woods.

HERB.: *Sandberg 262,* Cannon Falls.

Galium circaezans MICHX. Fl. N. Am. I, 80 (1803).

G. brachiatum MUHL. Cat. 15 (1813).

G. circaeoides R. and S. Syst. III, 256 (1818).

Wats. and Coult., Gray's Man. 6 ed. 226; Britt., Fl. N. J. 127; Webb., Fl. Neb. 142; Chap., Fl. S. St. 174; Mac., Fl. Can. I, 202; Upham, Fl. Minn. 67; Cov., Fl. Ark. 188; Gray, Syn. Fl. I, 2, 37; Coult., Fl. Tex. 162.

North America: Q., Ont. to N. Eng., N. J. and Fla.; W. to Dak., Neb., Ark. and Tex.

Minn. valley: Reported from S. E. edge, but no Minn. specimens seen.

Galium aparine LINN. Fl. Dan. 495 (1757).

Wats. and Coult., Gray's Man. 6 ed. 226; Britt., Fl. N. J. 127; Mac., Fl. Can. I, 200; Webb., Fl. Neb. 142; Hook., Fl. Gt. Brit. 194; Coult., Fl. Colo. 127; Wats., Fl. Calif. II, 284; Nym., Fl. Eur.; Led., Fl. Ross. II, 419; Forbes and Hems., Fl. Sin. 393; Herd., Fl. Eur. Russ. 62; Wats., King Exp. 134; Cov., Fl. Ark. 188; Gray, Syn. Fl. I, 2, 36; Hart., Fl. Scand. I, 67: Coult., Fl. Tex. 163.

All Europe to Caucasus; Sib., Dahuria, China, Japan.

North America: N. Br., N. S., Q., Ont. to Vancouver, Alaska and Aleutian Isls.; S. to Calif. and Tex.; E. throughout U. S.; forms E. of the Mississippi are probably introduced from W. Europe.

Minn. valley: Forest district and to Chippewa valley; moist woods and copses.

HERB.: *Ballard 232,* Jordan, Scott Co.; *Ballard 49,* Chaska; *Kassube 117,* Minneapolis; *Holtz. 25,* Minnehaha; *Herb. Moyer 102,* Montevideo.

CI. CAPRIFOLIACEAE. Honeysuckle Family.

Lindl., *Veg.-King.* 766 (1846); Endlicher, *Gen. Pl.* 566 (1836-40)—*Lonicereae;* Bentham and Hooker, *Gen. Plant.* II, 1 (1873); Baillon, *Hist. Pl.* VII, 497 (1880)—*sub Rubiaceae.*

Genera: 12; N. hemisphere and Australia and S. America; most in temperate regions.

Species: 200–250; principally shrubs and small trees.

LINNAEA GRONOV. Linn. Gen. 525 (1737).

Obolaria SIEG. Prim. 79 (1736).
Abelia R. BR. Clarke's Abel. Chin. App. 376 (1818).
Vesalea MART. and GAL. Bull. Brux. XI, 242 (1843).

Baillon, *Hist. Pl.* VII, 501; Benth. and Hook., *Gen. Pl.* II, 4, 5; Durand, *Ind. Gen. Phan.* 169, 170.

Living species: Two well marked sections, *Abelia*, 10; *Linnaea*, 1; N. boreal and temperate regions to the Himalayas, China and Mexico. N. America, 1.

Linnaea borealis LINN. Spec. 631 (1753).

Wats. and Coult., Gray's Man. 6 ed. 219; Britt., Fl. N. J. 123; Coult., Fl. Colo. 124; Wats., Fl. Calif. II, 278; Upham, Fl. Minn. 64; Mac., Fl. Can. I, 195, 539; Trautv., Fl. Sib. 63; Hook., Fl. Gt. Brit. 191; Nym., Fl. Eur.; Led., Fl. Ross. II, 392; Gray, Syn. Fl. I, 2, 13; Forbes and Hems., Fl. Sin. 359; Miyabe, Fl. Kur. 238; Herd., Fl. Eur. Russ. 62; Roth., Wheel. Exp. 136; Wats., King Exp. 132; Hart., Fl. Scand. I, 69.

W. Europe to C. Asia, Amurland, Corea, China, Japan (Yezo), Kamtk. and Kuriles; N. to Scotland, Lapland and Siberia.

North America: Atl. to Pac. in Can.; N. in Arctic circle; S. to N. Eng., N. J., Penn., Md.; W. to Minn., Dak., Colo., Mont., Oregon and Calif.

Minn. valley: Reported N. E. districts, S. of Lake Minnetonka; doubtless in N. W. district with *Cornus canadensis;* mossy woods.

HERB.: *Roberts 50,* French river; *Roberts 51,* Duluth; *Herrick 125,* St. Louis river; *Bailey 48,* Vermilion lake; *Juni 6,* N. shore, Lake Superior; *Sandberg 241,* Tower.

SYMPHORICARPOS JUSS. Gen. 211 (1789).

Symphoria PERS. Syn. I, 214 (1805).
Anisanthus WILLD. Rel. R. and S. Syst. V, XIV (1819).
Symphoricarpa NECK. Elem. 220 (1790).

Baillon, *Hist. Pl.* VII, 498; Benth. and Hook., *Gen. Pl.* II, 4; Durand, *Ind. Gen. Phan.* 169.

Living species: 6±, N. America and mountains of Mexico; Canada, 3–4; E. Sts., 3; California, 4–5; S. Sts., 1; Rocky mts., 3–4; Pl. King, 2; Pl. Wheel., 2; W. Tex., 3.

Symphoricarpos racemosus MICHX. Fl. N. Am. I, 107 (1803).

Symphoria racemosa PERS. Syn. I, 214 (1805).
Xylosteum ciliatum var. *album* PURSH, Fl. Am. 161 (1814).

Symphoricarpos elongata PRESL, DC. Prodr. IV, 338 (1830).
S. heterophylla PRESL, DC. Prodr. IV, 338 (1830).

Wats. and Coult., Gray's Man. 6 ed. 220; Britt., Fl. N. J. 123; Coult., Fl. Colo. 125; Upham, Fl. Minn. 65; Mac., Fl. Can. I, 196; Wats., Fl. Calif. I, 279; Gray, Syn. Fl. I, 2, 13.

North America: N. S., N. Br., Q., Ont. to N. Eng. N. J, and Penn.; W. to Minn., Colo., Calif. and Oregon, Brit. Col. and Rockies?

Minn. valley: N. E. district, and perhaps N. W.; edges of thickets and woods.

HERB.: *Kassube 111*, Minneapolis; *Sandberg 243*, Cannon Falls; *Herb. Sheld. 1689*, Minneapolis.

Symphoricarpos racemosus MICHX. var. **pauciflorus** ROBBINS, Gray's Man. 5 ed. 203 (1867).

Wats. and Coult., Gray's Man. 6 ed. 220; Webb., Fl. Neb. 142; Mac., Fl. Can. I, 196, 539; Coult., Fl. Colo. 125; Upham, Fl. Minn. 65; Gray, Syn. Fl. I, 2, 14.

North America: Ont. to N. W. T., Man., Rockies, Brit. Col. and Vancouver; S. to N. Y., Penn.; W. to Minn., Wisc., Mont., Oregon and Colo.

Minn. valley: Forest district to Redwood river; rare and local; edges of thickets and woods.

HERB.: *Bailey 65*, Vermilion lake; *Holzinger 100*, Winona Co.; *Bailey 415*, Burntside lake; *Herb. Sheld. 1868*, Minneapolis; *Herb. Sheld. 1867*, Ramsey Co.

Symphoricarpos occidentalis (R. BR.) HOOK. Fl. Bor.-Am. I, 285 (1833).

Symphoria occidentalis R. BR. Rich. App. Frankl. Journ. (1824).

Wats. and Coult., Gray's Man. 6 ed. 220; Webb., Fl. Neb. 142; Mac., Fl. Can. I, 195; Coult., Fl. Colo. 125; Upham, Fl. Minn. 65; Gray, Syn. Fl. I, 2, 13.

North America: Man. to Rocky mts. and N. to lat 64°; S. to N. Mich., Wisc., Minn., Ill., Neb., Colo. and Mont.

Minn. valley: Throughout; edges of woods and thickets.

HERB.: *Ballard 313*, Belle Plaine; *Taylor 759*, Glenwood; *Ballard 171*, Shakopee; *Taylor 619*, Minnesota lake; *Taylor 759a*, Glenwood; *Sheldon 1101*, Springfield; *Sheldon 365*, Madison Lake; *Sheldon 273*, Madison Lake; *Sheldon 57*, Elysian; *Sheldon 774*, Sleepy Eye; *Taylor 32*, Elysian; *Herrick 126*, Minneapolis; *Oestlund 80*, Hennepin Co.; *Kassube 110*, Minneapolis; *Holzinger 99*, Hamilton; *Sandberg 242*, Cannon Falls.

Symphoricarpos symphoricarpos (LINN.) MACM. Torr. Bull. XIX, 15 (1892).

Lonicera symphoricarpos LINN. Spec. 175 (1753).
Symphoricarpos orbiculatus MOENCH, Meth. 491 (1794).
S. vulgaris MICHX. Fl. N. Am. I, 106 (1803).
Symphoria conglomerata PERS. Syn. I, 214 (1805).
Symphoricarpos glomerata PURSH, Fl. Am. 162 (1814).
S. parviflora DESF. Cat. (1829).

Wats. and Coult., Gray's Man. 6 ed. 220; Webb., Fl. Neb. 142; Upham, Fl. Minn. 65; Britt., Fl. N. J. 123; Chap., Fl. S. St. 169; Cov., Fl. Ark. 187; Gray, Syn. Fl. I, 2, 13; Coult., Fl. Tex. 156.

North America: N. Y., Penn., N. J.; W. to Minn., Dak., Neb., Ark. and Tex.; N. Car. in mts.

Minn. valley: Forest district to Chippewa valley and N. W. districts; banks and rocky woods.

HERB.: *MacMillan 9*, Glenwood; *Taylor 438*, Lake Helena, Waseca Co.; *Oestlund 81*, Minneapolis; *Herb. Sheld. 1745*, Minneapolis; *Herb. Moyer 96*, Montevideo.

LONICERA LINN. Gen. 162 (1737).

Caprifolium TOURN. Inst. 608 (1700).
Xylosteum TOURN. l. c. 609 (1700).
Nintooa SWEET, Hort. Brit. ed. II, 258 (1830).

Baillon, *Hist. Pl.* VII, 499; Benth. and Hook., *Gen. Pl.* II, 5; Durand, *Ind. Gen. Phan.* 170; Schenck, *Palaeophyt.* 788.

Living species: 100±; temperate and tropical regions of the N. hemisphere. Russia, 15; Europe, 19; Russian Europe, 5; North America, 20; Canada, 11; E. Sts., 9; Rocky mts., 3; S. Sts., 4; California, 7; Pl. King, 3; Pl. Wheel., 1; W. Tex., 2.

Fossil species: Upper Miocene of Oeningen (*Heer*); doubtful.

Lonicera glauca HILL, Hort. Kew. 446 (1768).

L. dioica LINN. Syst. Veg. 215 (1774).
L. media MURR. Comm. Gött. (1776).
L. parviflora LAM. Enc. Meth. I, 728 (1783).
Caprifolium glaucum MOENCH, Meth. 502 (1794).
C. bracteosum MICHX. Fl. N. Am. I, 105 (1803).
C. parviflorum PURSH, Fl. Am. 161 (1814).
C. dioicum R. and S. Syst. V, 216 (1819).
Lonicera douglasii DC. Prodr. IV, 332 (1830).

Wats. and Coult., Gray's Man. 6 ed. 221; Britt., Fl. N. J. 124; Mac., Fl. Can. I, 197, 539; Webb., Fl. Neb. 142; Chap., Fl. S. St. 170; Upham, Fl. Minn. 65; Cov., Fl. Ark. 187?; Gray, Syn. Fl. I, 2, 17.

North America: Man., Saskatchewan, Hudson Bay, N. W. T. to Montreal; Brit. Col. and Rockies; S. to N. Eng., N. J., Penn.; W. to Minn. Dak. and Neb.

Minn valley: Throughout and abundant; rocky banks and edges of woods.

HERB.: *Sheldon 235*, Lake Washington, Blue Earth Co.; *Ballard 684*, Waconia; *Taylor 37*, Elysian; *Sheldon 801*, Sigel township, Brown Co.; *Taylor 37a*, Elysian; *Sheldon 509*, Waseca; *Ballard 229*, Jordan, Scott Co.; *Ballard 386*, Jordan, Scott Co.; *Taylor 908*, Glenwood; *Herrick 127*, St. Louis river; *Leiberg 25*, Blue Earth Co.; *Sandberg 245*, Cannon Falls; *Holzinger 101*, Winona bluffs; *Sandberg 246*, Red Wing; *Herb. Wickersheim 57*, Mankato; *Herb. Moyer 97*, Montevideo.

Lonicera sullivantii GRAY, Proc. Am. Acad. XIX, 76 (1883).

L. douglasii HOOK. Fl. Bor.-Am. I, 282 (1833).
L. flava var. *B.* T. and G. Fl. II, 6 (1841).
L. flava GRAY, Man. 5 ed. 204 (1867) *chiefly*.

Wats. and Coult., Gray's Man. 6 ed. 221; Mac., Fl. Can. I, 197; Upham, Fl. Minn. 65; Webb., Fl. Neb. 142; Chap., Fl. S. St. 170; Cov., Fl. Ark. 187; Gray, Syn. Fl. I, 2, 17.

North America: Assiniboia and Man. to Minn., Neb., Ill., Ohio, Ark., Tenn. and N. Car.

Minn. valley: Reported from N. E. district and E. edge; rare or local; rocky woods or banks.

HERB.: *Sandberg 244*, Vasa.

Lonicera ciliata MUHL. Cat. 22 (1813).

Vaccinium album LINN. Spec. 350 (1753) *sp. Kalm.*
Xylosteum tartaricum MICHX. Fl. N. Am. I, 106 (1803).
X. ciliatum PURSH, Fl. Am. 161 (1814).
Lonicera canadensis R. and S. Syst. V, 260 (1819).
Caprifolium ciliatum OK. Rev. Gen. I, 274 (1891).

Wats. and Coult., Gray's Man. 6 ed. 220; Britt., Fl. N. J. 124; Mac., Fl. Can. I, 197; Upham, Fl. Minn. 65; Gray, Syn. Fl. I, 2, 15.

North America: N. S., N. Br., Q., Ont. to N. Eng., N. J. and Penn.; W. to Minn., Saskatchewan and Brit. Col.

Minn. valley: Reported from N. E. district; rare; rocky banks and woods.

HERB.: *Roberts 52*, Duluth; *Herrick 128*, St. Louis river; *Bailey 243*, Vermilion lake; *Sandberg 247*, Cannon Falls.

DIERVILLA LINN. Gen. 150 (1737).

Weigela THUNB. Act. Holm. 135 (1780).
Weigelia PERS. Syn. I, 176 (1805).
Calysphyrum BUNGE, Enum. Pl. Chin. 33 (1831).
Calyptrostigma TRAUTV. and MEY. Midd. Reise Okh. (1847).

Baillon, *Hist. Pl.* VII, 497; Benth. and Hook., *Gen. Pl.* II, 6; Durand, *Ind. Gen. Phan.* 170.

Living species: 7±; E. North America, China and Japan; N. America, 2; Canada, 1: S. Sts., 2; E. Sts., 1.

Diervilla diervilla (LINN.) MACM. Torr. Bull. XIX, 15 (1892).

Lonicera diervilla LINN. Spec. 175 (1753).
Diervilla trifida MOENCH, Meth. 492 (1794).
D. tournefortii MICHX. Fl. N. Am. I, 107 (1803).
D. humilis PERS. Syn. I, 214 (1805).
D. canadensis WILLD. Enum. 222 (1809).
D. lutea PURSH, Fl. Am. 162 (1814).

Wats. and Coult., Gray's Man. 6 ed. 222; Britt., Fl. N. J. 124; Upham, Fl. Minn. 65; Mac.,Fl. Can. I, 198, 540; Gray, Syn. Fl. I, 2, 18.

North America: Newf., Anticosti, N. S., N. Br., Ont. to N. J. and mts. of N. Car.; W. to Minn., Ky.; Hudson Bay to Rockies.

Minn. valley: Forest district, infrequent; rocky places.

HERB.: *Roberts 53*, Poplar river; *Kassube 112*; Minneapolis; *Roberts 54*, Duluth; *Herrick 129*, Minneapolis; *Bailey 167*, Vermilion lake; *Sandberg 248*, Cannon Falls; *Gedge 4*, Riverton; *Holtz 16*, Hennepin Co.

TRIOSTEUM LINN. Gen. ed. V, 211 (1754).

Baillon, *Hist. Pl.* VII, 500; Benth. and Hook , *Gen. Pl.* II, 4; Durand, *Ind. Gen. Phan.* 169.

Living species: 3; 2, North America; 1, Himalayas; Canada, 1; E. Sts., 2; S. Sts., 2.

Triosteum perfoliatum LINN. Spec. 176 (1753).

T. majus MICHX. Fl. N. Am. I, 107 (1803).

Wats. and Coult., Gray's Man. 6 ed. 219; Britt., Fl. N. J. 123; Webb., Fl. Neb. 142; Mac., Fl. Can. I, 199, 540; Upham, Fl. Minn. 66; Chap., Fl. S. St. 170; Cov., Fl. Ark. 187; Gray, Syn. Fl. I, 2, 12.

North America: Q., Ont. to N. Eng., N. J. and Alab ; W. to Minn., Neb. and Ark.

Minn. valley: Forest district; woods and shaded banks of rivers and lakes.

HERB.: *Sheldon 165*, Madison lake; *Ballard 82*, Chaska; *Taylor 269*, Janesville; *Holzinger 102*, Winona Co.; *Sandberg 249*, Center City; *Herb. Sheld. 1732*, Minneapolis.

SAMBUCUS LINN. Gen. 247 (1737).

Tripetalus LINDL. Mitch. Three Exp. II, 14 (1839).
Phyteuma LOUR. Fl. Coch. Chin. 172 (1790).

Baillon, *Hist. Pl.* VII, 501; Benth. and Hook., *Gen. Pl.* II, 3; Durand, *Ind. Gen. Phan.* 169; Schenck, *Palaeophyt.* 788.

Living species: 12±; temperate regions, except Cape of Good Hope and mts. of tropics. Russia, 3; Europe, 3; N. America, 5; Canada, 3; Rocky mts., 3; S. Sts., 2; California, 2; Pl. King, 3; Pl. Wheel., 3; W. Tex., 2.

Fossil species: Amber; Germany (*Conwentz*).

Sambucus racemosa LINN. Spec. 270 (1753).

S pubens MICHX. Fl. N. Am. I, 181 (1803).
S. pubescens PERS. Syn. I, 328 (1805).
S. pubescens var. *B.* HOOK. Fl. Bor.-Am. I, 279 (1833).
S. pubescens var. *arborescens* T. and G. Fl. II, 13 (1841).

Wats. and Coult., Gray's Man. 6 ed. 217; Mac., Fl. Can. I, 193, 538; Britt., Fl. N. J. 121; Wats., Fl. Calif. II, 278; Chap., Fl. S. St. 171; Coult., Fl. Colo. 124; Upham, Fl. Minn. 66; Led., Fl. Ross. II, 338; Nym., Fl. Eur.; Forbes and Hems., Fl. Sin. 348; Miyabe, Fl. Kur. 238; Herd., Fl. Eur. Russ. 62; Wats., King Exp. 133; Gray, Syn. Fl. I, 2, 8; Hart., Fl. Scand. I, 555.

Northern and Central Europe; Mid. Russia to Sib., China, Japan, Kamtk and Kuriles.

North America: N. S., across Can. to Vancouver and Alaska; S. to N. J. and Ga.; W. to Colo., Dak., Minn.; S. in Rockies to Arizona; S. in Sierras and Coast range to Calif. and Utah.

Minn. valley: Throughout; thickets and banks of streams.

HERB.: *Taylor 44*, Elysian; *Taylor 427*, Janesville; *Herrick 130*, St. Louis river; *Sandberg 252*, Goodhue Co.; *Herrick 131*, Minneapolis; *Holzinger 103*, Winona Co.; *Sandberg 253*, Tower; *Kassube 113*, Minneapolis; *Herb. Sheld. 1869*, Minneapolis; *Herb. Wickersheim 58*, Mankato; *Herb. Moyer 99*, Montevideo.

Sambucus canadensis LINN. Spec. 269 (1753).

S. nigra MARSH. Arbust. Amer. 141 (1785).
S. humilis RAF. Ann. Nat. 13 (1820).
S. glauca GRAY, Pl. Wright. II, 66 (1852).

Wats. and Coult., Gray's Man. 6 ed. 217; Britt., Fl. N. J. 121; Webb., Fl. Neb. 143; Mac., Fl. Can. I, 194; Upham, Fl. Minn. 66; Chap., Fl. S. St. 171; Coult., Fl. Colo. 124; Wats., King Exp. 134; Cov., Fl. Ark. 187; Gray, Syn. Fl. I, 2, 9; Coult., Fl. Tex. 155.

North America: N. S. to Saskatchewan; S. to N. Eng., N. J. and Fla.; W. to Minn., Neb., Iowa, Dak., Ark., Tex., Colo., Utah, Arizona.

Minn. valley: Throughout; thickets and banks of streams.

HERB.: *Sheldon 1166*, New Ulm; *Sheldon 1098*, Springfield; *Sheldon 336*, Smith's Mills, Blue Earth Co.; *Sheldon 729*, Sleepy Eye; *Ballard 129*, Chaska; *Ballard 551*, Spring lake, Scott Co.; *Sandberg 251*, Cannon Falls; *Herb. Sheld. 1688,* Minnetonka; *Herb. Moyer 98,* Montevideo.

VIBURNUM LINN. Gen. 245 (1737).

Opulus TOURN. Inst. 607 (1700).

Microtinus, Selenotinus, Oreinotinus, Tinus OERST. Vidd. Kjob. (1860).

Baillon, *Hist. Pl.* VII, 502; Benth. and Hook., *Gen. Pl.* II, 3; Durand, *Ind. Gen. Phan.* 169; Schenck., *Palaeophyt.* 789.

Living species: 80±; temperate and warmer N. hemisphere; Andes; Madagascar; W. Indies. North America, 14; S. Sts., 11; Canada, 8; Rocky mts., 1; E. Sts., 12; California, 1; W. Tex., 2.

Fossil species: A considerable number described; Cretaceous (Upper) and Tertiary, America and Europe; Greenland and Spitzbergen abundant (*Heer*). The bulk of the species are in W. N. America (*Saporta, Ward, Lesquereaux, Heer et alt.*) 75± species.

Viburnum opulus LINN. Spec. 268 (1753).

V. trilobum MARSH. Arbust. Amer. 162 (1785).
V. opuloides MUHL. Cat. (1813).
V. oxycoccus PURSH, Fl. Am. 203 (1814).
V. edule HOOK. Fl. Bor.-Am. I, 281 (1833) *in part.*
V. opulus var. *americanum* T. and G. Fl. II, 18 (1841).

Wats. and Coult., Gray's Man. 6 ed. 217; Britt., Fl. N. J. 122; Mac., Fl. Can. I, 195; Upham, Fl. Minn. 66; Hook., Fl. Gt. Brit. 189; Led., Fl. Ross. II, 384; Nym., Fl. Eur.; Forbes and Hems., Fl. Sin. 354; Miyabe, Fl. Kur. 238; Herd., Fl. Eur. Russ. 62; Gray, Syn. Fl. I, 2, 10; Hart., Fl. Scand. I, 62.

Europe; Arctic Russ. to Caucasus; N. and Mid. Asia to China, Japan, Kuriles and Kamtk.

North America: Anticosti and N. S. to Red valley and Assiniboia; W. to Brit. Col. and Oregon; S. to Minn., Penn. and N. J.

Minn. valley: Forest district and N. W.; edges of woods and along streams.

HERB.: *Ballard 146,* Chaska; *Taylor 1099,* Glenwood; *Taylor 940,* Glenwood; *Taylor 549,* Janesville; *Taylor 278,* Janesville; *Sheldon 231,* Lake Washington, Blue Earth Co.; *Arthur 174,* Vermilion Lake; *Kassube 116,* Minneapolis; *Sandberg 257,* Cannon Falls; *Herb. Sheld. 1768,* Minneapolis.

Viburnum pubescens (AIT.) PURSH, Fl. Am. 202 (1814).

V. dentatum var. *pubescens* AIT. Hort. Kew. I, 372? (1789).
V. subtomentosum MICHX. Fl. N. Am. I, 179 (1803) *in part.*
V. villosum RAF. Med. Repos. V, 361 (1808).
V. rafinesquianum R. and S. Syst. V, 630 (1819).

Wats. and Coult., Gray's Man. 6 ed. 218; Britt., Fl. N. J. 122; Mac., Fl. Can. I, 194; Upham, Fl. Minn. 66; Chap., Fl. S. St. 172; Gray, Syn. Fl. I, 2. 11.

North America: Q. to Assiniboia; S. to N. Eng., N. J. and mts. of Ga.; W. to Minn. and Iowa.

Minn. valley: Throughout; rocky places and gravelly banks.

HERB.: *Bailey 62,* Vermilion lake; *Sandberg 256,* Tower; *Herb. Sheld. 1778,* Ft. Snelling; *Herb. Moyer, 101* Montevideo.

Viburnum dentatum LINN. Spec. 268 (1753).

V. dentatum var. *lucidum* AIT. Hort. Kew. I, 372 (1789).

V. dentatum var. *glabellum* MICHX. Fl. I, 179 (1803) *in part.*

Wats. and Coult., Gray's Man., 6 ed. 218; Britt., Fl. N. J. 122; Mac., Fl. Can. I, 194, 538; Upham, Fl. Minn. 66; Chap., Fl. S. St. 172; Cov., Fl. Ark. 187; Gray, Syn. Fl. I, 2, 11.

North America: N. Br., Ont. to N. J. and Ga.; W. to Minn. and Ark.

Minn. valley: Forest district and W. to Cottonwood valley; wet woods and edges of swamps.

HERB.: *Ballard 237,* Jordan, Scott Co.; *Sandberg 255,* Red Wing; *Kassube 115,* Minneapolis; *Holzinger 104,* Hamilton.

Viburnum lentago LINN. Spec. 268 (1753).

Wats. and Coult., Gray's Man. 6 ed. 219; Britt., Fl. N. J. 121; Mac., Fl. Can. I, 194; Upham, Fl. Minn. 66; Webb., Fl. Neb. 143; Chap., Fl. S. St. 171; Cov., Fl. Ark. 187; Gray, Syn. Fl. I, 2, 12.

North America: Q. to Red and Saskatchewan valleys; S. to N. Eng., N. J. and Ga.; W. to Minn., Neb., Mo., Ark.

Minn. valley: Throughout; thickets and edges of woods.

HERB.: *Sheldon 506,* Waseca; *Sheldon 381,* Madison Lake; *Taylor 268,* Janesville; *Sheldon 711,* Sleepy Eye; *Taylor 43,* Elysian; *Ballard 231,* Jordan, Scott Co.; *Sheldon 1295,* Lake Benton; *Kassube 114,* Minneapolis; *Sandberg 254,* Red Wing; *Herrick 132,* Minneapolis; *Herb. Wickersheim 59,* Idlewild, Lincoln Co.; *Herb. Sheld. 1777,* Minneapolis; *Herb. Moyer 100,* Chippewa river, near Montevideo.

CII. ADOXACEAE. Adoxa Family.

Bentham and Hooker, *Gen. Plant.* II, 2 (1873)—*sub Sambuceae;* Baillon, *Hist. Pl.* VII, 503 (1880)—*Adoxeae,* Trib. XV of *Rubiaceae.*

Genera: 1; N. hemisphere.

Species: 1; boreal and temperate region to Arctic circle; around the pole.

ADOXA LINN. Gen. 334 (1737).

Moschetallina TOURN. Inst. 156 (1700).

Moscatella CORD. Adans. Fam. Pl. II, 243 (1763).

Baillon, *Hist. Pl.* VII, 503; Benth. and Hook., *Gen. Pl.* II, 2; Durand, *Ind. Gen. Phan.* 169.

Living species: 1; arctic and temperate regions, N. hemisphere.

Adoxa moschatellina LINN. Spec. 257 (1753).

Moschetallina tetragona MOENCH, Meth. 478 (1794).

Wats. and Coult., Gray's Man. 6 ed. 216; Mac., Fl. Can. I, 193; Upham, Fl. Minn. 66; Coult., Fl. Colo. 123; Hook., Fl. Gt. Brit. 190; Trautv., Fl. Sib. 63; Led., Fl. Ross. II, 382; Nym., Fl. Eur.; Forbes and Hems., Fl. Sin. 347; Herd., Fl. Eur. Russ. 62; Roth., Wheel. Exp. 8, 135; Gray, Syn. Fl. I, 2, 8; Hart., Scand. Fl. I, 156.

Northern Europe to Pyrenees and Caucasus; Siberia, Kamtk. and China.

North America: W. and C. Can., Hudson Bay reg. to Brit. Col. and to 54° and 64° N. lat.; S. to Colo., Minn., Iowa and Wisc.

Minn. valley: Reported from E. edge; but very doubtful; banks of streams.

HERB.: *Sandberg 250*, Vasa.

CIII. VALERIANACEAE. Valerian Family.

Endlicher, *Gen. Pl.* 350 (1836–40); Bentham and Hooker, *Gen. Plant.* II, 151 (1873); Baillon, *Hist. Pl.* VII, 504 (1880).

Genera: 8; N. hemisphere and S. America; principally N. regions.

Species: 325±, largely developed in temperate Asia and Europe.

VALERIANA LINN. Gen. 21 (1737) emend. Benth. l. c. (1873).

Baillon, *Hist. Pl.* VII, 517; Benth. and Hook., *Gen. Pl.* II, 154; Durand, *Ind. Gen. Phan.* 187; Schenck, *Palaeophyt.* 794.

Living species: 150±, all temperate and tropical regions except Australia. Russia, 18; Europe, 21; Russian Europe, 8; North America, 8; Canada, 4–5; Rocky mts., 3; E. Sts., 3; S. Sts, 2; California, 1; Pl. King, 2; Pl. Wheel., 2.

Fossil species: 1, *Valerianites*, Oligocene, Aix (*Saporta*).

Valeriana edulis NUTT. T. and G. Fl. II, 48 (1841).

Patrinia ceratophylla HOOK. Fl. Bor.-Am. I, 290 (1833).

Valeriana ciliata T. and G. Fl. II, 49 (1841).

Patrinia longifolia MACNAB, Edin. Phil. Journ. XIX (——).

Valeriana ceratophylla MACM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 228; Mac., Fl. Can. I, 205; Upham, Fl. Minn. 68; Wats., King Exp. 136; Roth., Wheel. Exp. 138; Gray, Syn. Fl. I, 2, 45.

North America: Ont. to Brit. Col.?; S. to Ohio, Iowa, Minn., Colo., Nev., N. Mex. and Arizona.

Minn. valley: S. E. districts and perhaps throughout forest district; rich ground along streams.

HERB.: *Sheldon 638,* Wilton, Waseca Co.; *Sheldon 536,* Waseca; *Sandberg 266,* Goodhue Co.; *Holtz 2,* Cedar lake; *Holzinger 108,* Winona.

VALERIANELLA MOENCH, Meth. 493 (1794) *emend.* Benth. l. c. (1873).

Fedia GAERTN. Fruct. II, 36 (1791).
Polypremum ADANS. Fam. Pl. II, 152 (1763).
Odontocarpa NECK. Elem. I. 133 (1790).
Dufresnia DC. Mem. Valer. 8 (1832).

Baillon, *Hist. Pl.* VII, 515; Benth. and Hook., *Gen. Pl.* II, 156; Durand, *Ind. Gen. Phan.* 187.

Living species: 55±; centers in the Mediterranean region; Europe; N. Africa; W. Asia; N. America. Europe, 22; Russian Europe, 9; Russia, 19; North America, 12–13; Canada, 3; E. Sts., 5–6; W. Tex., 4.

Valerianella radiata (WILLD.) DUFRESNE, Hist. Val. 57 (1811).

Valeriana radiata WILLD. Spec. I, 184 (1797).
Fedia radiata MICHX. Fl. N. Am. I, 118 (1803).

Wats. and Coult., Gray's Man. 6 ed. 229; Chap., Fl. S. St. 184; Upham, Fl. Minn. 68; Cov., Fl. Ark. 188; Gray, Syn. Fl. I, 2, 45; Coult., Fl. Tex. 164.

North America: Penn. to Minn., Ark., Tex. and Fla.

Minn. valley: Reported from E. edge; doubtful; low, rich ground.

Valerianella chenopodifolia (PURSH) DC. Prodr. IV, 629 (1830).

Fedia chenopodifolia PURSH, Fl. Am. 727 (1814).
F. radiata TORR. Fl. U. S. I, 35 (1824).
F. triquetra HOCHST. and STEUD. Flora (1837).
F. fagopyrum T. and G. Fl. II, 51 (1841).

Wats. and Coult., Gray's Man. 6 ed. 229; Upham, Fl. Minn. 68; Gray Syn. Fl. I, 2, 45.

North America: N. Y. to Minn.; S. to Va., Ind. and Ky.

Minn. valley: Reported from E. edge; rare; low and rich grounds.

CIV. CUCURBITACEAE. Gourd Family.

Endlicher, *Gen. Pl.* 934 (1836-40); Endlicher, l. c. 933 (1836-40)—*Nandirhobeae*; Bentham and Hooker, *Gen. Plant.* I, 816 (1862-67); Baillon, *Hist. Pl.* VIII, 375 (1886); Müller and Pax, *in Engler and Prantl, Nat. Pflanz.* IV, 5, 1 (1889).

Genera: 80–85; cosmopolitan; most richly developed in the tropics. Old World, 50±; New World, 36–39.

Species: 650±; mostly tendril-bearing herbs.

SICYOS Linn. Gen. 739 (1737).

Sicyoides Tourn. Inst. 103 (1700).

Badaroa Bert. Herb. 838 ex Endl. *Gen.* (1840).

Baillon, *Hist. Pl.* VIII, 428; Benth. and Hook., *Gen. Pl.* I, 837; Durand, *Ind. Gen. Phan.* 150; Engl. *Nat. Pflanz.* IV, 5, 37 (Müller and Pax).

Living species: 30; warmer America; Pacific islands; Australia. Russia, 1; Russian Europe, 1; W. Tex., 1.

Sicyos angulatus Linn. Spec. 1013 (1753).

Elaterium trifoliatum Linn. Mant. 123 (1767).

Sicyoides angulata Moench, Meth. 513 (1794).

Sicyos acutus Raf. Fl. Lud. 113 (1817).

Wats. and Coult., Gray's Man. 6 ed. 195; Webb., Fl. Neb. 141; Upham, Fl. Minn. 59; Mac., Fl. Can. I, 176, 532; Chap., Fl. S. St. 149; Britt., Fl. N. J. 111; Led., Fl. Ross. II, 143; Herd., Fl. Eur. Russ. 52; Coult., Fl. Tex. 125; Cov., Fl. Ark. 184; Engl. Müller and Pax, Nat. Pflanz. IV, 5, 38; Wats., Bibl. Ind. I, 395.

S. Russia and Caucasus mts.

North America: Q., Ont., N. H. to N. J. and Fla.; W. to Minn., Neb., E. Kan., Ark. and Tex.

Minn. valley: S. E. district; river banks and near lake shores; climbing over shrubbery.

Herb.: *Sandberg 212*, Red Wing.

MICRAMPELIS Raf. Med. Rep. V, 352 (1808).

Hexameria T. and G. Rep. Pl. N. Y. 137 (1836).

Megarhiza Torr. Pac. R. R. Rep. VI, 74 (1857).

Marah Kellogg, Proc. Cal. Acad. 38 (1876).

Echinocystis T. and G. Fl. N. Am. I, 542 (1838).

Echinopepon Naud. Ann. Sci. Nat. ser. 5, VI, 17 (1866).

Baillon, *Hist. Pl.* VIII, 433; Benth. and Hook., *Gen. Pl.* I, 835; Durand, *Ind. Gen. Phan.* 150; Engler and Prantl, *Nat. Pflanz.* IV, 5, 35; O. Kuntze, *Rev, Gen.* I, 257.

Living species: 25; tropical S. America; warmer and temperate N. America. N. America above Mexico 6± (see *Greene, Pittonia* vol. II).

Micrampelis echinata (Muhl.) Raf. Med. Rep. 352 (1808).

Momordica echinata Muhl. Trans. Am. Phil. Soc. III, 180 (1793).

Sicyos lobatus Michx. Fl. N. Am. II, 217 (1803).

Momordica lobata SERINGE, DC. Prodr. III, 312 (1828).
Echinocystis lobata T. and G. Fl. I, 542 (1838).
E. echinata B. S. P. Cat. N. Y. (1888).
Micrampelis lobata GREENE, Pittonia 128 (1890).

Wats. and Coult., Gray's Man. 6 ed. 195; Britt., Fl. N. J. 111; Webb., Fl. Neb. 141; Upham, Fl. Minn. 59; Coult., Fl. Colo. 109; Mac., Fl. Can. I, 177, 532; Engl., Nat. Pflanz. IV, 5, 35; Wats., Bibl. Ind. I, 394.

North America: N. S., N. Br., Ont. to S. Man.; S. to N. Eng., Penn., N. J., Del.; W. to Red, Assiniboine, Saskatchewan valleys, Minn., Neb., Colo., Kan. and Tex.

Minn. valley: Throughout; less common W. of Chippewa valley; rich river banks and damp places near lakes.

HERB.: *Taylor 1023,* Glenwood; *Sheldon 1094,* Springfield; *Oestlund 64,* Minneapolis; *Kassube 98,* Minneapolis; *Oestlund 65,* Minneapolis; *Sandberg 213,* Goodhue Co.; *Sandberg 214,* Red Wing; *Herb. Sheld. 1684,* Minneapolis.

CV. CAMPANULACEAE. Blue-Bell Family.

Endlicher, *Gen. Pl.* 513 (1836–40); Endlicher, l. c. 509 (1836–40)—*Lobeliaceae;* DC. *Prod.* VII, 497 (1838)—*Cyphiaceae;* Mart. *in DC. Prodr. l. c.* 548 (1838)—*Sphenocleaceae;* Bentham and Hooker, *Gen. Plant.* II, 541 (1876); Baillon, *Hist. Pl.* VIII, 317 (1886)—*excl. Goodenieae, Brunonieae, Phyllachneae;* Schönland *in Engler and Prantl, Nat Pflanz.* IV, 5, 40 (1889).

Genera: 55; temperate regions; a few represented in tropical mts.; herbaceous forms widely distributed; shrubby forms principally American.

Species: 1150±; abundant in W. Europe and Mediterranean region.

CAMPANULA LINN. Gen. 129 (1737).
Roucela DUM. Comm. Bot. 14 (1822).
Erinia NOUL. Fl. S.-Pyr. 407 (1837).
Depierrea ANON. Linn. XVI, 372 (1842).
Medium TOURN. Elem. Bot. I, 90 (1694).
Marianthemum SCHR. D. R. Ges. I (——).
Quinqueloculraria KOCH, Linn. XXIII, 630 (1849).
Symphyandra A. DC. Mon. Camp. 365 (1830).
Adenophora FISCH. Mem. Mosc. VI, 165 (1823).
Floerkea SPRENG. Anleit. II, 523 (1802).
Heterocodon NUTT. Trans. Phil. Soc. VIII, 255 (1842).

Baillon, *Hist. Pl.* VIII, 353; Benth. and Hook., *Gen. Pl.* II, 561; Durand, *Ind. Gen. Phan.* 240; Engler and Prantl, *Nat. Pflanz.* IV, 5, 49 (Schönland.)

Living species: 250; temperate regions, N. hemisphere; especially Mediterranean region; Europe, 100; Russia, 56; Russian Europe, 15; North America, 13; Canada, 11; E.

Sts., 4; Rocky mts., 4; S. Sts., 5; California, 5; Pl. Wheel., 3; Pl. King, 5; W. Tex., 2.

Campanula americana LINN. Spec. 233 (1753).

C. declinata MOENCH, Meth. (1794).
C. obliqua JACQ. Hort. Schoenb. 336 (1798).
C. acuminata MICHX. Fl. N. Am. I. 108 (1803).
C. illinoensis FRES. fide Gray.

Wats. and Coult., Gray's Man. 6 ed. 309; Britt., Fl. N. J. 157; Webb., Fl. Neb. 141; Mac., Fl. Can. I, 289; Upham, Fl. Minn. 92; Chap., Fl. S. St. 256; Cov., Fl. Ark. 199; Gray, Syn. Fl. II, 1, 14; Engl. Schön., Nat. Pflanz. IV, 5, 51.

North America: N. Br. and Ont. to Minn.; S. to N. J. and Fla.; W. to Dak., Neb., Kan., Ark.

Minn. valley: Throughout; rich woods or thickets and shady banks.

HERB.: *Sheldon 1096*, Springfield; *Sheldon 788*, Cottonwood river, near Sleepy Eye; *Sheldon 1163*, New Ulm; *Ballard 614*, Chaska; *Oestlund 109*, Minneapolis; *Sandberg 370*, Cannon Falls; *Herb. Moyer 158*, Montevideo.

Campanula aparinoides PURSH, Fl. Am. 159 (1814).

C. erinoides MUHL. Cat. (1813) *not Linn.*

Wats. and Coult., Gray's Man. 6 ed. 309; Brit., Fl. N. J. 157; Webb., Fl. Neb. 141; Chap., Fl, S. Sts. 256; Coult., Fl. Colo. 226; Mac., Fl. Can. I, 288; Gray, Syn. Fl. II, 1, 13.

North America: N. Br., Q., Ont. to S. Man. and Saskatchewan; S. to N. Eng., N. J. and mts. of Ga; W. to Minn., Colo. and Neb.

Minn. valley: Throughout; cold bogs, marshes or grassy shores of streams and lakes.

HERB.: *Sheldon 748*, Sleepy Eye; *Sheldon 693*, Waseca; *Taylor 525*, Mud lake, Waseca Co.; *Ballard 437*, Prior's lake, Scott Co.; *Ballard 585*, Rice lake, Scott Co.; *Taylor 824*, Glenwood; *Ballard 666*, Waconia; *Ballard 773*, Swan lake, Carver Co.; *Ballard 828*, Page lake, Carver Co.; *Ballard 718*, Benton, Carver Co.; *Bailey 272*, St. Louis river; *Winchell 12*, Minnetonka; *Bailey 321*, St. Louis river; *Roberts 75*, Grand Marais; *Kassube 154*, Minneapolis; *Holzinger 138*, Winona Co.; *Bailey 110*, Vermilion lake; *Sandberg 369*, Red Wing; *Holzinger 139*, Winona; *Herb. Sheld 1687*, Minneapolis.

Campanula rotundifolia LINN. Fl. Dan. 855 (1857).

C. petiolata A. DC. Camp. 279, 338 (1830).

Wats. and Coult., Gray's Man. 6 ed. 308; Britt., Fl. N. J. 157; Webb., Fl. Neb. 141; Mac., Fl. Can. I, 288, 560; Upham, Fl. Minn. 92; Coult., Fl. Colo. 226; Brew. and Wats., Fl. Calif. I, 447; Led., Fl. Ross. II, 888;

Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 246: Miyabe, Fl. Kur. 245; Herd., Fl. Eur. Russ. 82; Wats., King Exp. 208; Roth., Wheel. Exp. 183; Engl. Schönland, Nat. Pflanz. IV, 5, 50; Gray, Syn. Fl. II, 1, 12 and Suppl. II, 395; Hart., Fl. Scand. I, 72; Coult., Fl.Tex. 252.

Circumpolar and all Eur. except Lusitania, Corsica, Greece and Spanish Coast; Asia to Himalayas; Kuriles and Saghalin to Japan.

North America:. Greenland at lat. 64° N. to Alaska; S. in Rockies to Mexico; E. to Minn., Neb., Ohio? and N. J.

Minn. valley: Forest district and N. W.; probably throughout; rocky banks and gravelly places.

HERB.: *Ballard 95*, Shakopee; *Taylor 861*, Glenwood; *Leonard 30*, Chatfield; *Bailey 475*, Agate Bay; *Kassube 153*, Minneapolis; *Roberts 74*, Grand Marais; *Sandberg 368*, Red Wing; *Hammond 24*, Lake City; *Herb. Sheld. 1888*, Minneapolis.

PENTAGONIA SIEG. Suppl. 14 (1737).

Speculum HALL. Fl. Jen. 215 (1745).
Specularia HEIST. Syst. Pl. VIII (1748).
Legouzia DUR. Fl. Bourg. II, 26 (1782).
Apenula NECK. Elem. I, 234 (1790).
Prismatocarpus L'HER. Sert. Angl. 1 (1788) p. p.
Triodanis RAF. ex Schönl. l. c. (1889).
Dysmicodon and **Campylocera** NUTT. Trans. Phil. Soc. 2, VIII, 255-257 (1842).

Baillon, *Hist. Pl.* VIII, 320 (*sub Campanula*); Benth. and Hook., *Gen. Pl.* II, 562; Durand, *Ind. Gen. Phan.* 240; O. Kuntze, *Rev. Gen.* II, 381; Engler and Prantl, *Nat. Pflanz.* IV, 5, 52 (Schönland).

Living species: 10; Middle Europe, 2; Mediterranean region, 6; North America, 4; Canada, 1; E. Sts., 2; California, 2; S. Sts., 2; W. Tex., 4.

Pentagonia perfoliata (LINN.) OK. Rev. Gen. II, 381 (1891).

Campanula perfoliata LINN. Spec. 239 (1753).
C. amplexicaulis MICHX. Fl. N. Am. I, (1803).
Specularia perfoliata DC. Mon. Camp. (1830).
Dysmicodon californicum and *ovatum* NUTT. Trans. Am. Phil. Soc. 2, VIII, 258 (1842).

Wats. and Coult., Gray's Man. 6 ed. 308; Britt., Fl. N. J. 157; Webb., Fl. Neb. 141; Upham, Fl. Minn. 92; Mac., Fl. Can. I, 286, 559; Chap., Fl. S. St. 257; Coult., Fl. Colo. 225; Brew. and Wats., Fl. Calif. I, 447; Roth., Wheel. Exp. 183; Wats., King Exp. 209; Cov., Fl. Ark. 199; Engl. Schönl. Nat. Pflanz. IV, 5, 52; Gray, Syn. Fl. II, 1, 11; O. Kuntze, Rev. Gen. II, 381; Coult., Fl. Tex. 252.

South America: Chile.

North America: Ont. to Brit. Col. and Pac.; S. to Oregon, Calif., Mexico; E. to Atl. coast, Fla. and Tex.

Minn. valley: N. E. district; open, sterile places and dry banks.

HERB.: *Kassube 155*, Minneapolis.

LOBELIA LINN. Gen. 678 (1737).

Dortmanna, Stooria, Ymnostema, Juchia NECK. Elem. I, 132 (1790).

Rapuntium GAERTN. Fruct. I, 151 (1788).

Trimeris, Tylomium, Dobrowskia, Mezleria, Gramatotheca PRESL, Mon. Lob. Prodr. 7–46 (1836).

Tupa G. DON, Syst. III, 700 (1834).

Holostigma and **Parastranthus** G. DON, l. c. 716 (1834).

Rhyncopetalum FRESEN. Mus. Senk. III, 66 (1845).

Diastatea SCHEIDW. Allg. Zeit 396 (1841).

Monopsis SALISB. Trans. Hort. Soc. Lond. (1812?).

Isolobus A. DC. Prodr. VII, 352 (1838–39).

Sclerotheca A. DC. l. c 356 (1838–39).

Dialypetalum BENTH. Gen. Pl. II, 553 (1876).

Palmerella A. GRAY, Proc. Am. Acad. XI, 80 (1876).

Haynaldia KAN. Mag. Nov. Lapok. I, 3 (1877).

Baillon, *Hist. Pl.* VIII, 362; Benth. and Hook., *Gen. Pl.* II, 551, 553; Durand, *Ind. Gen. Phan.* 238, 239; Engler and Prantl, *Nat. Pflanz.* IV, 5, 66, 68 (Schönland).

Living species: 220; temperate and warmer regions, especially Middle and Eastern Europe and Asia; N. America, 25; Canada, 6; Rocky mts., 2; S. Sts., 17; E. Sts., 13; Caliifornia, 2–3; Pl. Wheel., 3; W. Tex., 8.

Lobelia inflata LINN. Spec. 931 (1753).

Wats. and Coult., Gray's Man. 6 ed. 307; Britt., Fl. N. J. 156; Upham, Fl. Minn. 91; Mac., Fl. Can. I, 286; Chap., Fl. S. St. 254; Cov., Fl. Ark. 199; Engl. Schönland, Nat. Pflanz. IV, 5, 67; Gray, Syn. Fl. II, 1, 7.

North America: Maritime provinces of Can. to Hudson Bay and Saskatchewan; S. to N. J., N. Car. and Ga.; W. to Minn., Mo. and Ark.

Minn. valley: Forest district; especially S.; rare; open places or meadows.

Lobelia kalmii LINN. Spec. 929 (1753).

Wats. and Coult., Gray's Man. 6 ed. 307; Britt., Fl. N. J. 157; Upham, Fl. Minn. 92; Mac., Fl. Can. I, 286, 559; Gray, Syn. Fl. II, 1, 7.

North America: Anticosti, N. S., N. Br. to Brit. Col., Hudson Bay, lat. 60° N. and Saskatchewan; S. to N. J. and Penn.; W. to Minn. and Mo.

Minn. valley: Forest district; S. to Blue Earth Co.; peat bogs and mossy places.

HERB.: *Ballard 618*, Shakopee; *Taylor 753*, Glenwood; *Bailey 479*, Agate bay; *Sandberg 366*, Red Wing; *Roberts 72*, Grand Marais; *Roberts 73*, Agate bay; *Kassube 152*, Minneapolis; *Leiberg 45*, Blue Earth Co.; *Oestlund 108*, Hennepin Co.; *Sandberg 367*, Goodhue Co.

Lobelia spicata LAM. Enc. Meth. III, 587 (1786).

L. claytoniana MICHX. Fl. N. Am. II, 153 (1803).
L. pallida MUHL. Cat. (1813).
L. goodenioides WILLD. Hort. Berol. 30 (1816).
L. nivea RAF. Ann. Nat. 15 (1820).

Wats. and Coult., Gray's Man. 306; Britt., Fl. N J. 156; Webb., Fl. Neb. 141; Upham, Fl. Minn. 92; Mac., Fl. Can. I, 286; Chap., Fl. S. St. 255; Cov., Fl. Ark. 199; Gray, Syn. Fl. II, 1, 6.

North America: Ont. to L. Huron reg.; S. to N. J. and Miss.; W. to Minn., Neb., Ark. and La.

Minn. valley: Throughout; abundant; moist or dry fields or sandy banks of lakes or streams.

HERB.: *Sheldon 1475*, Pipestone; *Sheldon 1115*, Springfield; *Taylor 550*, Janesville; *Taylor 563*, Minnesota lake; *Taylor 860*, Glenwood; *Sheldon 769*, Sleepy Eye; *Taylor 766*, Glenwood; *Sheldon 633*, Wilton, Waseca Co.; *Ballard 461*, Prior's lake, Scott Co.; *Oestlund 107*, Hennepin Co.; *Leiberg 44*, Blue Earth Co.; *Herrick 183*, Minneapolis; *Leonard 29*, Minneapolis; *Holzinger 137*, Winona Co.; *Sandberg 364*, Chisago Co.; *Kassube 151*, Minneapolis; *Sandberg 365*, Cannon Falls; *Herb. Sheld. 1924*, Minneapolis; *Herb. Wickersheim 89*, Idlewild, Lincoln Co.; *Herb. Moyer 157*, Montevideo. The last three are var. *hirtella* Gray.

Lobelia syphilitica LINN. Spec. 945 (1753).

L. glandulosa LINDL. Bot Reg. XXXII, t. 63 (1847).
L. syphilitica var. *ludoviciana* A. DC. Prodr. VII, 377 (1837).

Wats. and Coult., Gray's Man. 6 ed. 306; Britt., Fl. N. J. 156; Webb., Fl. Neb. 141; Mac., Fl. Can. I, 285; Chap., Fl. S. St. 254; Upham, Fl. Minn. 91; Coult., Fl. Colo. 224; Cov., Fl. Ark. 199; Engl. Schönland, Nat. Pflanz. IV, 5, 67; Gray, Syn. Fl. II, 1, 4.

North America: Ont. to Owen Sound, Minn. and Dak.; S. to N. J., Ga. and La.; W. to Colo., Neb. and Ark.

Minn. valley: Throughout; low meadows and thickets; frequent.

HERB.: *Sheldon 1400*, Lake Benton; *Sheldon 1322*, Verdi, Lincoln Co.; *Taylor 1051*, Glenwood; *Kassube 150*, Minneapolis; *Huntington 10*, Rock Co.; *Holzinger 136*, Winona Co.; *Oestlund 106*, Minneapolis; *Sandberg 362*, Goodhue Co.; *Sandberg 363*, Cannon Falls; *Herb. Sheld. 1662*, Minneapolis.

Lobelia cardinalis LINN. Spec. 930 (1753).

Wats. and Coult., Gray's Man. 6 ed. 305; Britt., Fl. N. J. 156; Upham, Fl. Minn. 91; Mac., Fl. Can. I, 285; Chap., Fl. S. St. 254; Coult., Fl. Colo.

224; Cov., Fl. Ark. 199; Engl. Schönland, Nat. Pflanz. IV, 5, 67; Gray, Syn. Fl. II, 1, 3; Coult., Fl. Tex. 251.

North America: N. S., N. Br. to Owen Sound, Wisc. and Minn.; S. to Colo., Ark., Miss., Fla. and Tex.; E. to Ills. and N. J.; N. to Saskatchewan.

Minn. valley: N. E. district; near Ft. Snelling; rare and local; deep woods or edges of bogs.

HERB.: *Holzinger 135*, Winona Co.; *Sandberg 361*, Goodhue Co.

CVI. COMPOSITAE. Composite Family.

Endlicher, *Gen. Pl.* 355 (1836–40); Rich.-ex Endl. (1801)—*Synanthereae;* Lindl., *Veg. King.* 702 (1846)—*Asteraceae;* Schultz-Bipontius, *Flora* 129 (1852)—*Cassiniaceae;* Bentham and Hooker, *Gen. Plant.* II, 163 (1873); Baillon, *Hist. Pl.* VIII, 1 (1886); Hoffmann *in Engler and Prantl, Nat. Pflanz.* IV, 5, 87 (1889).

Genera: 500±; 400± (Baillon); 766 (B. and H.); cosmopolitan. 6, fossil from Miocene (*Schimper*), doubtful.

Species: 10,000–12,000; arborescent forms tropical; 30±, fossil, doubtful.

VERNONIA SCHREB. Gen. Pl. II, 541 (1774).

Baccharoides MOENCH, Meth. 578 (1794).

Teichostemma R. BR. Salt. Abyss. App. 65 (1828).

Candidia TEN. Att. Ac. Nap. IV, 104 (1822).

Hololepis DC. Act. Mus. Par. XVI, 189 (1818).

Leiboldia SCHLECHT. ex Walp. Ann. I, 388 (1848).

Ascaricida, Gymnanthemum, Isonema, Distephanus CASS. Bull. Philom. (1817).

Lepidoploa, Achyrocoma, Centrapalus, Oliganthes CASS. Dict. III, VII, XXVI (1826).

Acilepis DON, Nep. 169 (1803).

Sufrago GAERTN. Fruct. II, 402 (1791) *part.*

Stengelia, Linzia, Cheliusia SCH.-BIP. Flora (1841).

Lysistemma, Ambassa, Xipholepis, Crystallopollen, Punduana STEETZ. Pet. Moss. Bot. 345 (1864).

Brachyleima R. BR. Salt. Abyss. Appx. 65 (1828).

Cyanopis, Webbia, Monosis (*part*), **Chronopappus, Centauropsis, Stilpnopappus, Strophopappus** DC. Prodr. V, 62 seq. (1836).

Odontoloma, Dialesta, Pollalesta HBK. N. Gen. et Spec. IV, 43, 45, 46 (1820).

Polydora FENZL. Flora 312 (1844).

Vernonella SOND. Linn. XXIII, 62 (1849).

Strobocalyx, Critoniopsis, Tephrothamnus, Stenocephalum, Piptolepis, Vanillosma, Iodopappus, Proteopsis (MART.) SCH.-BIP. Pollichia (1861 and 1863).

Cyanthillium BL. Bij. 889 (1826).

Claotrachelus ZOLL. Geneesk. Arch. (1847).
Llerasia TRIANA, Ann. Sci. Nat. ser. 4, IX, 37 (1858).
Turpinia LLAV. and LEX. Nov. Veg. I, 24 (1824).
Adenocyclus LESS. Linn. IV, 337 (1830).
Xiphochaeta POEPP. et ENDL. N. Gen. III, 44 (1845).
Lachnorhiza A. RICH. Cub. Fl. II, 34 (1853).
Carpophyllus SCHOTT. Spreng. Syst. Cur. Post. 409 (1828).

Baillon, *Hist. Pl.* VIII, 118; Benth. and Hook., *Gen. Pl.* II, 227; Durand, *Ind. Gen. Phan.* 189; Schenck, *Palaeophyt.* 794 (*Compositae*); Engler and Prantl, *Nat. Pflanz.* IV, 5, 124 (Hoffmann).

Living species: 500±; America, 250; Africa, 100; Madagascar, 50; Asia, 50; cosmopolitan, except Europe. Centers in Brazil. 10–12, U. S. Canada, 2; Rocky mts., 2; E. Sts., 6; W. Tex., 6; more numerous in Mexico and on the border.

Fossil species: A few seeds from the Miocene may be referred here with some hesitation.

Vernonia fasciculata MICHX. Fl. N. Am. II, 94 (1803).
V. corymbosa SCHWEIN. Keat. Narr. Miss. (1825).
V. altissima DC. Prodr. V, 15 (1836).

Wats. and Coult., Gray's Man. 6 ed. 238; Webb., Fl. Neb. 150; Upham, Fl. Minn. 68; Coult., Fl. Colo. 141; Cov., Fl. Ark. 189; Gray, Syn. Fl. I, 2, 90; Coult., Fl. Tex. 175.

North America: Minn., Dak., Colo. to Ohio, Ky., Neb., Ark. and Tex.

Minn. valley: Throughout; common; meadows, prairies and river banks, wet places.

HERB.: *Sheldon 1351,* Verdi, Lincoln Co.; *Sheldon 1455,* Pipestone Co.; *Taylor 680,* Minnesota lake; *Sheldon 1015,* Sleepy Eye; *Sandberg 266,* Goodhue Co.; *Oestlund 83,* Minneapolis; *Herrick 136,* Minneapolis; *Herrick 137,* Hennepin Co.; *Herb. Moyer 106,* Montevideo.

Vernonia noveboracensis (LINN.) WILLD. Spec. III, 1632 (1803).
Serratula noveboracensis LINN. Spec. 818 (1753).
S. praealta LINN. Spec. 818 (1753).
Chrysocoma tomentosa WALT. Fl. Car. 196 (1788).
Vernonia tomentosa ELL. Sk. II, 288 (1824).
V. praealta HOOK. Fl. Bor.-Am. I, 304 (1833).

Wats. and Coult., Gray's Man. 6 ed. 238; Britt.. Fl. N. J. 128; Mac., Fl. Can. I, 206; Chap., Fl. S. St. 188; Upham, Fl. Minn. 68; Cov., Fl. Ark. 189; Gray, Syn. Fl. I, 2, 89; Webb., Appx. Neb. 44.

North America: Ont. to Maine and N. J.; S. to Fla. and Miss.; W. to Minn., Neb., E. Kan., Ark. and Tex.

Minn. valley: Reported from forest district; Ft. Snelling to Blue Earth Co.; rare; low grounds and near sloughs.

EUPATORIUM LINN. Gen. 638 (1737).

Osmia and **Heterolaena** SCH. BIP. Herb. Berol.

Kerstenia NECK. Elem. I, 81 (1790).

Chromolaena DC. Prodr. V, 133 (1836).

Praxelis, Gyptis and **Coleosanthus** CASS. Dict. X, XX, XLIII (1826-1834).

Ooclinium, Campuloclinium, Hebeclinium, Conoclinium, Critonia, DC. Prodr. V, 133, seq. (1836).

Bulbostyles WALP. Rep. VI, 707 (1847).

Wikstroemia SPRENG. Syst. III, 434 (1826).

Batschia MOENCH, Meth. 567 (1794).

Ageratiopsis SCH. BIP. Herb. Berol.

Disynaphia DC. Prodr. VII, 267 (1838).

Baillon, *Hist. Pl.* VIII, 128; Benth. and Hook., *Gen. Pl.* II, 245; Durand, *Ind. Gen. Phan.* 192; Engler and Prantl, *Nat. Pflanz.* IV, 5, 138.

Living species: 600±; 400 (*Hoffman*); 560 (*Durand*); wanting in most of Africa and in Australia; otherwise cosmopolitan; centers in Central and tropical America; United States, 50±; S. Sts., 28; Canada, 3-4; E. Sts., 18; California, 2; Rocky mts., 4; W. Tex., 19; Europe, 2-3; Russia, 3-4.

Eupatorium ageratoides LINN. f. Suppl. 355 (1781).

Ageratum altissimum LINN. Spec. 839 (1753).

Eupatorium altissimum LINN. Syst. Veg. 614 (1774).

E. odoratum WALT. Fl. Car. 200 (1788).

E. fraseri POIR. Suppl. II, 600 (1811).

Wats. and Coult., Gray's Man. 6 ed. 241; Britt., Fl. N. J. 130; Mac., Fl. Can. I, 206; Webb., Fl. Neb. 150; Upham, Fl. Minn. 70; Chap., Fl. S. St. 196; Cov., Fl. Ark. 189; Gray, Syn. Fl. 101; Coult., Fl. Tex. 179.

North America: N. Br., Q., Ont. to N. J., Fla. and Miss.; W. to Minn., Neb., Kan., Ark., Tex.

Minn. valley: Throughout; common; woods and shaded banks; alluvial terraces and near lake shores.

HERB.: *Ballard 806*, Goose lake, Carver Co.; *Sheldon 906*, Sleepy Eye; *Sheldon 1277*, Lake Benton; *Sheldon 1209*, New Ulm; *Taylor 979*, Glenwood; *Oestlund 88*, Minneapolis; *Holzinger 109*, Winona Co.; *Sandberg 279*, Vasa; *Kassube 124*, Minneapolis; *Herb. Wickersheim 61*, Lake Benton; *Herb. Moyer 111*, Chippewa river, near Montevideo.

Eupatorium perfoliatum LINN. Spec. 838 (1753).

Wats. and Coult., Gray's Man. 6 ed. 241; Britt., Fl. N. J. 130; Mac., Fl. Can. I, 206; Webb., Fl. Neb. 150; Chap., Fl. S. Sts. 196; Coult., Fl. Colo. 142; Upham, Fl. Minn. 70; Cov., Fl. Ark. 189; Gray, Syn. Fl. I, 2, 99.

North America: N. S., N. Br. to S. Man.; S. to N. Eng., N. J., N. Car. and Fla.; W. to Minn., Neb., Dak, and La. to Ark.

Minn. valley: Throughout; common; low grounds and edges of thickets.

HERB.: *Taylor 983,* Glenwood; *Sheldon 293,* Madison lake; *Taylor 650,* Minnesota lake; *Sheldon 1296,* Lake Benton; *Ballard 725,* Benton, Carver Co.; *Herrick 142,* Minneapolis; *Kassube 123,* Ramsey Co.; *Sandberg 278,* Red Wing; *Herb. Sheld. 1666,* Minneapolis.

Eupatorium altissimum LINN. Spec. 1171 (1753).

Kuhnia glutinosa DC. Prodr. V, 127 (1836).

Wats. and Coult., Gray's Man. 6 ed. 240; Webb., Fl. Neb. 150; Upham, Fl. Minn. 70; Chap., Fl. S. St. 195; Cov., Fl. Ark. 189; Gray, Syn. Fl. I, 2, 99.

North America: Penn. to Minn., Neb., Ark., Ky., Tex., N. Car.

Minn. valley: Forest district; principally S. central portion; dry soil and hillsides; infrequent.

HERB.: *Leiberg 31,* Blue Earth Co.; *Sandberg 277,* Cannon Falls.

Eupatorium serotinum MICHX. Fl. N. Am. II, 100 (1803).

Wats. and Coult., Gray's Man. 6 ed. 239; Chap., Fl. S. St. 196; Upham, Fl. Minn. 70; Cov., Fl. Ark. 189; Gray, Syn. Fl. I, 2, 97.

North America: Md. to Fla. and Miss.; W. to Minn., Kan., Ark., Tex. and Mexico.

Minn. valley: Reported from S. edge; infrequent; along banks of rivers and on terraces.

Eupatorium purpureum LINN. Spec. 836 (1753).

E. trifoliatum LINN. Spec. 836 (1753).
E. maculatum LINN. Amoen. Ac. IV. 288 (1759).
? *E. fusco-rubrum* WALT. Fl. Car. 199 (1788).
E. verticillatum MUHL. Willd. Spec. III, 760 (1800).
E. falcatum MICHX. Fl. N. Am. II, 99 (1803).
E. punctatum WILLD. Enum. II, 853 (1809).
E. dubium POIR. Suppl. II, 606 (1811).
E. laevigatum TORR. Cat. Pl. N. Y. (1819).
E. ternifolium ELL. Sk. II, 306 (1824).
E. purpureum var. *maculatum* DARL. Fl. Cestr. 453 (1826).

Wats. and Coult., Gray's Man. 6 ed. 239; Britt., Fl. N. J. 128; Mac., Fl. Can. I, 206, 541; Coult., Fl. Colo. 142; Webb., Fl. Neb. 150; Upham, Fl. Minn. 70; Chap., Fl. S. St. 194; Roth., Wheel Exp. 139; Cov., Fl. Ark. 189; Gray, Syn. Fl. I, 2, 95, 96; Coult., Fl. Tex. 177.

North America: Anticosti, N. S., N. Br., to Brit. Col. and Rocky mts.; to lat. 57° N.; S. to N. Eng., N. J., Fla. and Miss.; W. to Dak., Neb., Ark., N. Mex., Utah and Tex.

Minn. valley: Throughout; common; low grounds and margins of bogs.

HERB.: *Ballard 841,* Page lake, Carver Co.; *Sheldon*

1294, Lake Benton; *Taylor 818*, Glenwood; *Sheldon 1159*, New Ulm; *Sandberg 275*, Cannon Falls; *Herrick 140*, Minnetonka; *Oestlund 87*, Minneapolis; *Herrick 141*, Minneapolis; *Arthur 64*, Vermilion lake; *Kassube 122*, Minneapolis; *Sandberg 276*, Goodhue Co.; *Herb. Sheld. 1817*, Minneapolis.

KUHNIA LINN. Gen. ed. VI, 237 (1764).

Carphephorus CASS. Bull. Philom. 198 (1816).

Anonymos WALT. Fl. Car. (1788).

Baillon, *Hist. Pl.* VIII, 134; Benth. and Hook., *Gen. Pl.* II, 248; Durand, *Ind. Gen. Phan.* 192; Engl. and Prantl. *Nat. Pflanz.* IV, 5, 142 (Hoffmann).

Living species: 3; N. U. S., 1; Arizona and Mexico, 1; Mexico, 1; W. Tex., 2.

Kuhnia eupatorioides LINN. f. Dec. II, 21 (1781).

Critonia kuhnia GAERT. Fruct. II, 411 (1791).

Kuhnia critonia WILLD. Spec. III, 1773 (1803).

K. elliptica and *pubescens* RAF. N. Fl. (1836).

Wats. and Coult., Gray's Man. 6 ed. 241; Britt., Fl. N. J. 130; Webb., Fl. Neb. 149; Coult., Fl. Colo. 143; Chap., Fl. S. St. 193; Upham, Fl. Minn. 69; Cov., Fl. Ark. 189; Engl. Hoffmann, Nat. Pflanz. IV, 5, 142; Gray, Syn. Fl. I, 2, 103; Coult., Fl. Tex. 180.

North America: N. J. to Minn. and Mont.; S. to Colo., Neb., Ark. and Tex.

Minn. valley: Throughout; particularly in prairie district; dry or high prairies and fields.

HERB.: *Sheldon 924*, Sleepy Eye; *Sheldon 923*, banks of Cottonwood, near Sleepy Eye; *Sheldon 1340*, Lake Benton; *Sheldon 1371*, Verdi, Lincoln Co.; *Sheldon 1179*. New Ulm; *Leiberg 30*, Blue Earth Co.; *Oestlund 86*, Minneapolis; *Sandberg 273*, Goodhue Co.; *Herb. Moyer 110*, Montevideo.

Kuhnia eupatorioides LINN. f. var. **glutinosa** (ELL.) HITCH. Pl. Ames, 498 (1891).

K. glutinosa ELL. Sk. II, 292 (1824).

K. suaveolens FRES. Ind. Sem. Frank. (1838).

K. eupatorioides var. *corymbulosa* T. and G. Fl. II, 78 (1841).

Wats. and Coult., Gray's Man. 6 ed. 241; Coult., Fl. Colo. 143; Upham, Fl. Minn. 69; Webb., Fl. Neb. 149; Gray, Syn. Fl. I, 2, 103; Coult., Fl. Tex. 180.

North America: Dak., Minn., Ill., to Neb., Alab. and Tex.

Minn. valley: S. E. and probably W.; dry prairies and high bluffs.

HERB.: *Sandberg 274*, Red Wing.

LACINIARIA HILL. Syst. Veg. IV, 49 (1762).

Psilosanthus NECK. Elem. (1790).
Liatris SCHREB. Gen. Pl. 572 (1791).
Calostelma DON, Sweet. Brit. Fl. Gard. 2, 184 (1838).

Baillon, *Hist Pl.* VIII, 135, *footnote*; Benth. and Hook., *Gen. Pl.* II, 248; Durand, *Ind. Gen. Phan.* 192; O. Kuntze, *Rev. Gen.* I, 349; Engler and Prantl, *Nat. Pflanz.* IV. 5, 142 (Hoffmann).

Living species: 15; N. America and Mexico. W. Tex., 6; E. Sts., 8; R. mts., 3; S. Sts., 15; Canada, 3.

Laciniaria spicata (LINN.) OK. Rev. Gen. I, 349 (1891).

Serratula spicata LINN. Spec. II, 819 (1753).
S. compta DRYAND. Bibl. Banks.
Liatris macrostachya MICHX. Fl. N. Am. II, 91 (1803).
L. spicata WILLD. Spec III, 1635 (1803).
L. resinosa NUTT. Gen. II, 131 (1818).
L. sessiliflora BERTOL. Misc. V, 10 (1846).

Wats. and Coult., Gray's Man. 6 ed. 243; Britt., Fl. N. J. 131; Upham, Fl. Minn. 69; Chap., Fl. S. St. 192; Mac., Fl. Can. I, 542; Cov., Fl. Ark. 190; Gray, Syn. Fl. I, 2, 111.

North America: Ont. to N. Y., Mass. and N. J.; S. to Fla. and Miss.; W. to Minn. and Ark.

Minn. valley: Throughout; moist and low prairies or meadows; abundant.

HERB.: *Sheldon 1353,* Verdi, Lincoln Co.; *Sheldon 1535,* Lake Benton; *Sheldon 765,* Sleepy Eye; *Sandberg 270,* Cannon Falls; *Leiberg 28,* Blue Earth Co,; *Sandberg 271,* Red Wing; *Kassube 121,* Minneapolis.

Laciniaria pycnostachya (MICHX.) OK. Rev. Gen. I, 349 (1891).

Liatris pycnostachya MICHX. Fl. N. Am. II, 91 (1803).
L. brachystachya NUTT. Jour. Acad. Phil. VII, 507 (1837).

Wats. and Coult., Gray's Man. 6 ed. 242; Webb., Fl. Neb 149; Upham, Fl. Minn. 69; Cov., Fl. Ark. 190; Gray, Syn. Fl. I, 2, 110; Coult., Fl. Tex. 182.

North America: Ind. to Minn. and Neb., S. to Ark., Tex. and Miss.

Minn. valley: Throughout; abundant; rather low or moist prairies, but drier localities than *L. spicata* (Linn.).

HERB.: *Sheldon 647,* Waseca; *Taylor 569,* Minnesota lake; *Sheldon 1118,* Springfield; *Taylor 1032,* Glenwood; *Oestlund 85,* Minneapolis; *Herb. Moyer 108,* Montevideo.

Laciniaria scariosa (LINN.) HILL. Syst. Veg. IV, 49 (1762).

Serratula scariosa LINN. Spec. 818 (1753).
Liatris aspera and *sphaeroidea* MICHX. Fl. N. Am. II, 92 (1803).
L. scariosa WILLD. Spec. III, 1635 (1803).
L. borealis NUTT. Paxt. Mag. V, 27 (1838).

Wats. and Coult., Gray's Man. 6 ed. 242; Britt., Fl. N. J. 131; Webb., Fl. Neb. 149; Mac., Fl. Can. I, 208; Chap., Fl. S. St. 192; Coult., Fl. Colo. 144; Roth., Wheel. Exp. 140; Cov., Fl. Ark. 190; Engl. Hoffmann, Nat. Pflanz. IV, 5, 142; Gray, Syn. Fl. I, 2, 110; Coult., Fl. Tex. 182.

North America: Saskatchewan to Rocky mts.; N. Eng. to Minn., Neb., Tex., Fla. and Miss.

Minn. valley: Throughout; common; dry or high places, prairie districts in particular.

HERB.: *Sheldon 1536*, Lake Benton; *Sheldon 978*, Sleepy Eye; *Sheldon 1191*, Springfield; *Sheldon 1270*, Lake Benton; *Sheldon 1364*, Verdi, Lincoln Co.; *Sheldon 1278*, Lake Benton; *Sheldon 1344*, Verdi, Lincoln Co.; *Taylor 1037*, Glenwood; *Taylor 1070*, Alexandria; *Sheldon 1586*, Lake Benton; *Herrick 138*, Minneapolis; *Leiberg 26*, Blue Earth Co.; *Leiberg 27*, Blue Earth Co.—(*proliferated form*); *Herrick 139*, Minneapolis; *Oestlund 84*, Minneapolis; *Sandberg 268*, Goodhue Co.; *Kassube 120*, Minneapolis; *Sandberg 269*, Red Wing; *MacM.* and *Sheld. 36*, Brainerd; *Herb. Wickersheim 60*, Idlewild, Lincoln Co.; *Herb. Sheld. 1813*, Ramsey Co.; *Herb. Moyer 107*, Montevideo.

Laciniaria punctata (HOOK.) OK. Rev. Gen. I, 349 (1891).

Liatris punctata HOOK. Fl. Bor.-Am. I, 306 (1833).
L. cylindrica TORR. Ann. Lyc. N. Y. II, 210 (1835).
L. resinosa DC. Prodr. V, 129 (1836).

Wats. and Coult., Gray's Man. 6 ed. 242; Mac., Fl. Can. I, 208; Coult., Fl. Colo. 144; Webb., Fl. Neb. 149; Upham, Fl. Minn. 69; Cov., Fl. Ark. 190; Gray, Syn. Fl. I, 2, 110; Coult., Fl. Tex. 182.

North America: Man. and Saskatchewan to Rocky mts.; S. to Mont., Minn., Neb., Kan., N. Mex. and Tex.

Minn. valley: Throughout; principally in prairie district at higher level; dry soil with *L. scariosa* (Linn.).

HERB.: *Sheldon 1373½*, Lake Benton; *Sheldon 1373*, Lake Benton—(*white-flowered form*); *Sheldon 1264*, Lake Benton; *Sheldon 1326*, Lake Benton; *Leiberg 29*, Blue Earth Co.; *Sandberg 272*, Red Wing, *Herb. Sheld. 1657*, Minneapolis; *Herb. Moyer 109*, Chippewa river bottoms, near Montevideo.

Laciniaria cylindracea (MICHX.) OK. Rev. Gen. I, 349 (1891).

Liatris cylindracea MICHX. Fl. N. Am. II, 93 (1803).
L. graminifolia WILLD. Spec. III, 1636 (1803).
L. squarrosa HOOK. Fl. Bor.-Am. I, 306 (1833).

Wats. and Coult., Gray's Man. 6 ed. 242; Mac., Fl. Can. I, 207; Upham, Fl. Minn. 69; Cov., Fl. Ark. 189; Gray, Syn. Fl. I, 2, 109.

North America: W. Ont. to Minn., Mo. and Ark.

Minn. valley: Throughout; not infrequent; dry, barren, sandy or waste places.

HERB.: *Taylor 1031*, Glenwood; *Herrick 137*, Minneapolis; *Sandberg 267*, Goodhue Co.; *MacM.* and *Sheld. 35*, Brainerd; *MacM.* and *Sheld. 35½*, Brainerd [*forma solitaria* (MacM.)]; *Taylor 1031½*, Glenwood (*forma solitaria*).

Laciniaria squarrosa (LINN.) HILL. Syst. Veg. IV, 49 (1762).

Serratula squarrosa LINN. Spec. 88 (1753).
Pteronia caroliniana WALT. Fl. Car. 292 (1788).
Liatris squarrosa WILLD. Spec. III, 1065 (1802).

Wats. and Coult., Gray's Man. 6 ed. 242; Webb., Fl. Neb. 149; Chap., Fl. S. St. 191; Coult., Fl. Colo. 144; Upham, Fl. Minn. 68; Coy., Fl. Ark. 190; Mac., Fl. Can. I, 542; Gray, Syn. Fl. I, 2, 109; Coult., Fl. Tex. 182.

North America: Ont. to Penn. and Fla.; W. to Dak., Neb., Ark. and Tex.

Minn. valley: Reported as common in all districts; no Minn. specimens seen; dry prairies and meadows.

Laciniaria squarrosa (LINN.) HILL, var. **intermedia** (LINDL.)

Liatris intermedia LINDL. Bot. Reg. XX, t. 948 (1825).
L. squarrosa var. *intermedia* DC. Prodr. V. 129 (1836).

Wats. and Coult., Gray's Man. 6 ed. 242; Upham, Fl. Minn. 68; Coult., Fl. Colo. 144; Mac., Fl. Can. I, 542; Gray, Syn. Fl. I, 2, 109; Coult., Fl. Tex, 182.

North America: Ont. to Minn., Mo. and Tex.

Minn. valley: Reported from S. districts; no Minn. specimens seen; dry prairies and hillsides.

GRINDELIA WILLD. Ges. Nat. Mag. Berl. 259 (1807).

Donia R. BR. Hort. Kew. ed. 2, V, 82 (1813).
Demetria LAGASCA, Elench. Matr. 30 (1816).
Aurelia and **Astetilia** CASS. Dict. XXXVII, 468 (1826–1834).
Chrysophthalmum PHIL. Linn. XXIX, 9 (1855).

Baillon, *Hist. Pl.* VIII, 155 (*sub Hysterionica*); Benth. and Hook , *Gen. Pl.* II, 250; Durand, *Ind. Gen. Phan.* 193; Engler and Prantl, *Nat. Pflanz.* IV, 5, 148 (Hoffmann).

Living species: 25; N. America and extra-tropical S. America; S. America, from S. Brazil to Chile and Patagonia, 6–8; N. America, principally W. of the Mississippi; California, 10; Canada, 3; Rocky mts., 2; S. Sts., 1; E. Sts., 2; Pl. Wheel., 4; W. Tex., 3; numerous in Mexican highlands.

Grindelia squarrosa (PURSH) DUNAL, DC. Prodr. V, 315 (1836).

Donia squarrosa PURSH, Fl. Am. 559 (1814).
Aurelia amplexicaulis CASS. Dict. XXXVII, 468 (1829).
Grindelia subdecurrens DC. Prodr. V, 315 (1836).
G. arguta GRAY, Pl. Wright. II, 81 (1852).

Wats. and Coult., Gray's Man. 6 ed. 244; Webb., Fl. Neb. 149; Mac., Fl. Can. I, 208; Coult., Fl. Colo. 145; Upham, Fl. Minn. 77; Wats., King Exp. 163; Roth. Wheel. Exp. 141; Gray, Syn. Fl. I, 2, 118; Coult., Fl. Tex. 184.

North America: 64° N. lat. in Brit. Col. to Red and Saskatchewan valleys; S. to Colo. and Tex. and Mex.; W. to Sierra Nevada mts.; E. to C. Minn. and Neb.

Minn. valley: S. W. and W. districts; prairies, roadsides and fields.

HERB.: *Sheldon 1433,* Pipestone Co.; *Leiberg 35,* Rock Co.

DIPLOGON RAF. Am. Mo. Mag. (Jan. 1818).

Chrysopsis NUTT. Gen. II, 150 (1818).

Ammodia, Macronema (*part*), **Pityopsis** NUTT. Trans. Phil. Soc. ser. 2, VII, 321, 592, 317 (1841).

Hectorea DC. Prodr. V, 95 (1836).

Heyfeldera SCH.-BIP. Flora 35 (1853).

Baillon, *Hist. Pl.* VIII, 155 (*sub Hysterionica*); Benth and Hook., *Gen. Pl.* II, 252; Engler and Prantl, *Nat. Pflanz.* IV, 5, 149 (Hoffmann); Durand, *Ind. Gen. Phan.* 193; O. Kuntze, *Rev. Gen.* I, 333.

Living species: 20±; North America; 12 (Gray); 13 (Hoffmann); E. Sts., 6; S. Sts., 7–9; California, 4; Canada, 1; W. Tex., 3.

Diplogon villosum (PURSH) OK. Rev. Gen. I, 334 (1891).

Amellus villosus PURSH, Fl. Am. 564 (1814).

Diplopappus villosus and *hispidus* HOOK. Fl. Bor.-Am. II, 22 (1840).

Chrysopsis villosa NUTT. Trans. Phil. Soc. VII, 317 (1841).

C. canescens T. and G. Fl. II, 256 (1841).

C. echioides BENTH. Bot. Sulph. 25 (1844).

Wats. and Coult., Gray's Man., 6 ed. 245; Webb., Fl. Neb. 149; Chap., Fl. S. St. 217; Coult., Fl. Colo. 145; Upham, Fl. Minn. 78; Mac., Fl. Can. I, 209; Roth., Wheel. Exp. 141; Wats., King Exp. 164, 422; Cov., Fl. Ark. 190; Engl. Hoffmann, Nat. Pflanz. IV, 5, 149; Gray, Syn. Fl. I, 2, 122; Coult., Fl. Tex. 185.

North America: Peace and Saskatchewan regions to Ills. and Alabama; W. to Brit. Col., Calif., Nev. and Colo.

Minn. valley: Throughout; dry fields, prairies and forest openings.

HERB.: *MacMillan 7,* Glenwood; *Sheldon 1369,* Lake Benton; *Ballard 640,* Chaska; *Ballard 377,* Jordan, Scott Co.; *Ballard 181,* Jordan, Scott Co.; *Taylor 744,* Glenwood; *Herrick 153,* Minneapolis; *Sandberg 308,* Goodhue Co.; *Kassube 134,* Minneapolis; *Oestlund 93,* Minneapolis; *MacM.* and *Sheld. 46,* Brainerd; *Herb. Wickersheim 78,* Idlewild, Lincoln Co.; *Herb. Moyer 130,* Appleton.

SOLIDAGO LINN. Gen. 651 (1737).

Euthamia NUTT. Gen. II, 162 (1818).
Chrysoma NUTT. Jour. Acad. Phil. VII, 67 (1834).
Amphiraphis DC. Prodr. V, 343 (1836) *part.*
Virga-aurea TOURN. Inst. 483 (1700).
Doria ADANS. Fam. II, 124 (1763).

Baillon, *Hist. Pl.* VIII, 153; Benth. and Hook., *Gen. Pl.* II, 256; Durand, *Ind. Gen. Phan.* 194; O. Kuntze, *Rev. Gen.* I, 311 (*sub Aster*); Engler and Prantl, *Nat. Pflanz.* 4, V, 150 (Hoffmann).

Living species: 80±; all North America but 3 or 4; Russia, 1–2; Europe, 1–2; S. America, 2; Azores, 1; S. Sts., 45; E. Sts., 42; Canada, 33; Rocky mts., 14; California, 7; Pl. King, 12; Pl. Wheel., 14; W. Tex., 24.

Solidago occidentalis NUTT. T. and G. Fl. II, 226 (1841).

Euthamia occidentalis NUTT. Trans. Am. Phil. Soc. VII, 326 (1841).
Solidago lanceolata CHAM. and SCHLECHT. Linn. VI, 502 (1831) *not Linn.*
Aplopappus baccharioides BENTH. Bot. Sulph. 24 (1844).

Upham, Fl. Minn. 77; Coult., Fl. Colo. 155; Brew. and Wats., Fl. Calif. I, 318; Mac., Fl. Can. I, 217; Roth., Wheel. Exp. 364; Wats., King Exp. 156; Gray, Syn. Fl. I, 2, 160.

North America: S. Brit. Col. to Mont. and N. Mex.; W. to Pac. coast and S. Colo.; E. to W. Minn.

Minn. valley: Local in Nicollet Co.; perhaps also on Coteau des Prairies; S. W.; hills and high plains.

Solidago graminifolia (LINN.) ELL. Sk. II, 391 (1824).

Chrysocoma graminifolia LINN. Spec. 841 (1753).
Solidago lanceolata LINN. Mant. 114 (1767).
Euthamia graminifolia NUTT. Gen. II, 162 (1818).

Wats. and Coult., Gray's Man. 6 ed. 252; Britt., Fl. N. J. 135; Webb., Fl. Neb. 149; Mac., Fl. Can. I, 217; Upham, Fl. Minn. 77; Chap., Fl. S. St. 214; Coult., Fl. Colo. 156; Wats., King Exp. 156; Cov., Fl. Ark. 190; Gray, Syn. Fl. I, 2, 160.

North America: Gulf of St. Lawrence to Rockies; N. to lat. 64°; S. to Mont., Colo., Neb., Ark.; E. to Atl. coast and Ga.

Minn. valley: Throughout; prairies, moist fields or hillsides.

HERB.: *Taylor 960*, Glenwood; *Sheldon 1533*, Lake Benton; *Sheldon 1359*, Verdi, Lincoln Co.; *Sheldon 1461*, Pipestone; *Ballard 788*, Swan lake, Carver Co.; *Ballard 562*, Prior's lake, Scott Co.; *Taylor 960*, Glenwood; *Sheldon 993*, Sleepy Eye; *Herrick 152*, Minneapolis; *Oestlund 92*, Minneapolis; *Kassube 133*, Ramsey Co.; *Bailey 255*, Vermilion lake; *Sandberg 307*, Goodhue Co.; *Roberts 62*, Cascade river; *Roberts 63*, Two Harbors.

Solidago riddellii FRANK. Ridd. Syn. 57 (1835).

S. amplexicaulis MART. Bull. Acad. Brux. VIII, 68 (1841).

Wats. and Coult., Gray's Man. 6 ed. 252; Upham, Fl. Minn. 76; Gray, Syn. Fl. I, 2, 160.

North America: Ohio to Minn. and Mo.; Ft. Monroe, Virginia.

Minn. valley: Reported from forest district, N. E. and S. central portions; peat bogs and marshy places.

Solidago rigida LINN. Spec. 880 (1753).

S. grandiflora RAF. Med. Repos. V, 359 (1808).

Wats. and Coult., Gray's Man. 6 ed 252; Britt., Fl. N. J. 133; Webb., Fl. Neb. 149; Coult., Fl. Colo. 155; Chap., Fl. S. St. 210; Mac., Fl. Can. I, 217, 543; Cov., Fl. Ark. 191; Upham, Fl. Minn. 76; Gray, Syn. Fl. I, 2, 159; Coult., Fl. Tex. 190.

North America: Ont. to N. J. and mts. of Ga.; W. to Saskatchewan and N. W. T., Colo., Minn., Neb., Tex.

Minn. valley: Throughout; abundant; prairies and copses or waste hillsides, roadsides and embankments.

HERB.: *Sheldon 505*, Waseca; *Sheldon 1451*, Pipestone; *Taylor 167*, Janesville; *Taylor 689*, Minnesota lake; *Taylor 825*, Glenwood; *Sheldon 1286*, Lake Benton; *Sheldon 1126*, Springfield; *Sheldon 471*, Madison Lake; *Holzinger 116*, Winona Co.; *Kassube 131*, Minneapolis; *Sandberg 303*, Cannon Falls; *Herb. Sheld. 1656*, Minneapolis; *Herb. Wickersheim 74*, Ash lake, Lincoln Co.; *Herb. Moyer 124*, Montevideo.

Solidago radula NUTT. Jour. Acad. Phil. VII, 327 (1835).

S. rotundifolia DC. Prodr. V. 332 (1836).

S. scaberrima T. and G. Fl. II, 220 (1841).

S. decemflora GRAY, Pl. Lindh. II, 223 (1849).

Wats. and Coult., Gray's Man. 6 ed. 251; Upham, Fl. Minn. 76; Wats., King Exp. 155; Cov., Fl. Ark. 191; Gray, Syn. Fl. I, 2, 158; Webb., Appx. Neb. 43; Coult., Fl. Tex. 190.

North America: W. Ill., Minn., Kan., Neb. to N. Mex., Ark., Tex. and W. La,

Minn. valley: Reported from S. central and W. districts and from N. edge; rare; dry hills and high plains.

Solidago nemoralis AIT. Hort. Kew. III, 213 (1789).

S. hispida MUHL. Willd. Spec. III, 2063 (1803).

S. conferta POIR. Enc. Meth. VIII, 459 (1808).

S. cinerascens SCHWEIN. Ell. Sk. II, 375 (1824).

S. decemflora DC. Prodr. V, 322 (1836).

S. puberula DC. Prodr. V, 333 (1836).

Wats. and Coult., Gray's Man. 6 ed. 251; Britt., Fl. N. J. 135; Webb., Fl. Neb. 149; Chap., Fl. S. St. 214; Mac., Fl. Can. I, 216; Coult., Fl. Colo. 155; Upham, Fl. Minn. 76; Cov., Fl. Ark. 191; Roth., Wheel, Exp. 149; Wats., King Exp. 155; Gray, Syn. Fl. I, 2, 158; Coult., Fl. Tex. 190.

North America: Anticosti to Rockies; S. to Fla., Nev., Tex., Mex., Arizona, Utah,

Minn. valley: Throughout; more abundant W. than E.; woodland and thickets.

HERB.: *Sheldon 945*, Redwood Falls; *Sheldon 1257*, Lake Benton; *Sheldon 1473*, Pipestone; *Sheldon 1354*, Verdi, Lincoln Co.; *Sheldon 1198*, New Ulm; *Herb. Wickersheim 75*, Idlewild, Lincoln Co.; *Sandberg 121½*, Red Wing; *Roberts 36½*, Minnesota Point; *Oestlund 49½*, Hennepin Co.; *Kassube 126½*, Minneapolis; *Holzinger 42½*, Winona Co.; *Holzinger 43½*, Winona Co.

Solidago nemoralis AIT. var. **mollis** (BARTL.).

S. mollis BARTL. Ind. Sem. Hort. Gött. (1836).
S. incana T. and G. Fl. II, 221 (1841) *excl. syn.*
S. nemoralis var. *incana* GRAY, Proc. Am. Acad. XVII, 197 (1882).

Wats. and Coult., Gray's Man. 6 ed. 251; Coult., Fl. Colo., 155; Mac., Fl. Can. I, 217; Upham, Fl. Minn. 76; Gray, Syn. Fl. I, 2, 158; Webb., Appx. Neb. 43.

North America: N. W. T., 49° N. lat. to Colo.; E. to Dak., Minn., Mont., Neb. and in Mexico.

Minn. valley: Far W. district; rare; high or dry prairies.

HERB.: *Sheldon 1500*, Lake Benton.

Solidago canadensis LINN. Spec. 878 (1753).

S. reflexa AIT. Hort. Kew. III, 210 (1789).
S. nutans DESF. Cat. 3 ed. 402 (1829).
S. longifolia SCHRAD. DC. Prodr. V, 330 (1836).

Wats. and Coult., Gray's Man. 6 ed. 251; Upham, Fl. Minn. 76; Britt., Fl. N. J. 135; Coult., Fl. Colo. 154; Webb., Fl. Neb. 148; Chap., Fl. S. St. 214; Mac., Fl. Can. I, 216; Herd., Fl. Eur. Russ. 66; Roth., Wheel. Exp. 147; Cov., Fl. Ark. 190; Gray, Syn. Fl. I, 2, 157; Coult., Fl. Tex. 190.

Introduced in Russia.

North America: Ft. Franklin on Mackenzie to Arizona; E. to N. S., N. J., N. Car. and Fla.

Minn. valley: Throughout; abundant; borders of woods and along railway embankments

HERB.: *Ballard 779*, Swan lake, Carver Co.; *Ballard 728*, Benton, Carver Co.; *Ballard 875*, Waconia; *Sheldon 1478*, Pipestone Co.; *Sheldon 1581*, Lake Benton; *Bailey 533*, Mud lake; *Roberts 61*, Poplar river; *Holzinger 117*, Winona Co.; *Bailey 168*, Vermilion lake; *Herrick 151*, Minneapolis; *Holzinger 118*, Winona Co.; *Sandberg 305*, Goodhue Co.; *Kassube 132*, Minneapolis; *Herb. Sheld. 1727*, Minneapolis; *1643*, St. Paul; *Herb. Wickersheim 77*, Ash lake, Lincoln Co.; *Herb. Moyer 125*, Chippewa river, near Montevideo; *126*, Montevideo.

Solidago serotina AIT. Hort. Kew. III, 211 (1789).

S. gigantea WILLD. Spec. III, 2056 (1803).
S. glabra DESF. Cat. 3 ed. 402 (1829).
S. fragrans DESF. Hort. Par. (1829).
S. pitcheri NUTT. Journ. Acad. Phil. VII, 101 (1834).

Wats. and Coult., Gray's Man. 6 ed. 251; Britt., Fl. N. J. 135; Webb., Fl. Neb. 149; Coult., Fl. Colo. 154; Upham, Fl. Minn. 77; Chap., Fl. S. St. 214; Mac., Fl. Can. I, 215; Cov., Fl. Ark. 191; Engl. Hoffmann, Nat. Pflanz. IV, 5, 150; Gray, Syn. Fl. I, 2, 156; Coult., Fl. Tex. 190.

North America: N. S., N. Br., Ont. to Saskatchewan, N. W. T. and 49° N. lat. on Red river; S. from Oregon to Tex.; E. to Atl. coast and Alabama.

Minn. valley: Throughout; edges of woods and open places or sunny banks of streams.

HERB.: *Sheldon 471,* Madison Lake; *Taylor 1018,* Glenwood; *Sheldon 1268,* Lake Benton; *Holzinger 119,* Winona Co.; *Sandberg 306,* Red Wing; *Sheldon 1527,* Lake Benton; *Herb. Moyer 127, 128, 129,* Montevideo.

Solidago serotina AIT. var. **gigantea** (AIT.) GRAY, Proc. Am. Acad. XVII, 179, 196 (1882).

S. gigantea AIT. Hort. Kew. III, 211 (1789).
S. serotina WILLD. Spec. III, 2056 (1803).

Wats. and Coult., Gray's Man. 6 ed. 251; Mac., Fl. Can. I, 216; Britt., Fl. N. J. 135; Chap., Fl. S. St. 214; Upham, Fl. Minn. 76; Wats., King Exp. 156; Gray, Syn. Fl. I, 2, 156; Webb., Appx. Neb. 43; Coult., Fl. Tex. 190.

North America: Newf., N. S., N. Br. to Pac.; N. to 59° on Peace river; S. to Tex. and Fla.; W. to Nev. on plains.

Minn. valley: Throughout; especially W. and N. W.; copses, thickets and embankments on river banks.

HERB.: *Taylor 986,* Glenwood.

Solidago missouriensis NUTT. Journ. Acad. Phil. VII, 32 (1834).

S. serotina HOOK. Comp. Bot. Mag. I, 97 (1835).
S. glaberrima MART. Bull. Acad. Brux. VIII, 68 (1841).

Wats. and Coult., Gray's Man. 6 ed. 251; Webb., Fl. Neb. 149; Upham, Fl. Minn. 76; Mac., Fl. Can. I, 215; Coult., Fl. Colo. 154; Roth., Wheel. Exp. 147; Cov., Fl. Ark. 191; Gray, Syn. Fl. I, 2, 155; Coult., Fl. Tex. 190.

North America: Assiniboia to Colo., Neb., Ark., Tex., Wisc., Ind. and Tenn.

Minn. valley: Prairie district, especially W.; reported from N. E. districts; doubtful; high plains and headlands.

HERB.: *Sheldon 1441,* Pipestone; *Sheldon 947,* Redwood Falls; *Sheldon 1178,* New Ulm; *Sheldon 1280,* Lake Benton;

Taylor 768, Glenwood; *Sheldon 1125*, Springfield; *Huntington 5*, Luverne; *Herb. Wickersheim 76*, Ash lake, Lincoln Co.

Solidago juncea AIT. Hort. Kew. III, 213 (1789).

S. ciliaris MUHL. Willd. Spec. III, 2056 (1803).
S. arguta T. and G. Fl. II, 214 (1841).
S. arguta var. *juncea* GRAY, Man. ed. V, 243 (1867).

Wats. and Coult., Gray's Man. 6 ed. 250; Britt., Fl. N. J. 134; Mac., Fl. Can. I, 215; Upham, Fl. Minn. 76; Gray, Syn. Fl. I, 2, 155.

North America: N. Br., Q., Ont. to Rockies, 44°, 54° and 64° N. lat. and Hudson Bay reg.; S. to N. J., Penn. and S. Car.; W. to Tenn. and Minn.

Minn. valley: N. E. districts; rare further S. in forest district; banks of streams and edges of woods.

HERB.: *Bailey 31*, Vermilion lake; *Sandberg 304*, Goodhue Co.

Solidago neglecta T. and G. Fl. II, 213 (1841).

Wats. and Coult., Gray's Man. 6 ed. 250; Britt., Fl. N. J. 133; Upham, Fl. Minn. 76; Mac., Fl. Can. I, 214; Gray, Syn. Fl. I, 2, 154.

North America: N. Br., Q., Ont., N. J. to Md.; W. to Minn.

Minn. valley: Reported from S. E. districts; doubtful; swamps.

Solidago rugosa MILL. Dict. ed. 8 (1768).

S. aspera AIT. Hort. Kew. III, 212 (1789).
S. altissima AIT. Hort. Kew. III, 212 (1789).
? *S. rigidula* BOSC. Hort. Par. (1808).
S. asperata HERB. Banks (*Solander*),
S. hirta WILLD. Enum. 891 (1809).
S. villosa PURSH, Fl. Am. II, 537 (1814).
S. humilis DESF. Cat. ed. 3, 402 (1829).
S. asperula DESF. Cat. ed. 3, 403 (1829).
S. altissima T. and G. Fl. II, 216 (1841).

Wats. and Coult., Gray's Man. 6 ed. 249; Britt., Fl. N. J. 135; Chap., Fl. S. St. 212?; Mac., Fl. Can. I, 214; Upham, Fl. Minn. 76; Cov., Fl. Ark. 191; Gray, Syn. Fl. I, 2, 153; Coult., Fl. Tex. 189..

North America: N. S., N. Br., Q., Ont. to Thunder bay; S. to Fla., Mo. and Ark.; W. to Minn. and Tex.

Minn. valley: Reported from S. central district; rare; fields and borders of thickets.

Solidago patula MUHL. Willd. Spec. III, 2059 (1803).

S. asperata PURSH, Fl, Am. II, 538 (1814).
S. angulata SPRENG. *in herb. Willd.*
S. frankii HOCHST. and STEUD. *in Dist.*

Wats. and Coult., Gray's Man. 6 ed. 249; Mac., Fl. Can. I, 214; Gray, Syn. Fl. I,2, 152; Chap., Fl. S. St. 211; Upham, Fl. Minn.76; Britt., Fl. N. J. 134; Coult., Fl. Tex. 189.

North America: Ont. to Minn.; S. to Ga., Mo. and Tex.

Minn. valley: Reported from S. E. district; doubtful; swamps and wet meadows.

Solidago speciosa NUTT. Gen. II, 160 (1818).

S. sempervirens MICHX. Fl. N. Am. II, 119 (1803) *in part.*

S. petiolaris MUHL. Cat. 79 (1813).

Wats. and Coult., Gray's Man. 6 ed. 249; Britt., Fl. N. J. 133; Chap., Fl. S. St. 210; Mac., Fl. Can. II, 214; Upham, Fl. Minn. 75; Cov., Fl. Ark. 191; Gray, Syn. Fl. I, 2, 152; Webb., Appx. Neb. 43; Coult., Fl. Tex. 189.

North America: N. S., N. Br. to Fla. and Miss.; W. to Minn., Neb. and Ark.

Minn. valley: Forest district and W. to Chippewa valley; rare; edges of woods and thickets.

HERB.: *Sandberg 302,* Red Wing; *Taylor 946,* Glenwood.

Solidago speciosa var. **rigidiuscula** T. and G. Fl. II, 205 (1841).

Wats. and Coult., Gray's Man. 6 ed. 249; Webb., Fl. Neb. 149; Coult., Fl. Colo. 153; Upham, Fl. Minn. 75; Cov., Fl. Ark. 191; Gray, Syn. Fl. I, 2, 152; Coult., Fl. Tex. 189.

North America: Minn., Neb., Colo. to Arizona and Texas.

Minn. valley: Reported from S. W. districts; doubtful; copses and edges of woods.

Solidago speciosa NUTT. var. **erecta** (PURSH).

S. erecta PURSH, Fl. Am. 542 (1814).

S. speciosa var. *angustata* T. and G. Fl. II, 205 (1841).

Wats. and Coult., Gray's Man. 6 ed. 249; Britt., Fl. N. J. 133; Webb., Fl. Neb. 149; Chap., Fl. S. St. 210; Upham, Fl. Minn. 75; Gray, Syn. Fl. I, 2, 152; Coult., Fl. Tex. 189.

North America: N. Eng,, N. J. to Fla. and Miss.; W. to Minn., Neb. and Tex.

Minn. valley: Reported from S. edge; doubtful; copses and edges of woods.

Solidago latifolia LINN. Spec. 879 (1753).

S. flexicaulis LINN. Spec. 879 (1753).

S. flexicaulis var. *latifolia* WILLD. Spec. III, 2064 (1803).

S. macrophylla BIGEL. Fl. Bost. 2 ed. 305 (1824).

Wats. and Coult., Gray's Man. 6 ed. 247; Britt., Fl. N. J. 132; Upham, Fl. Minn. 75; Chap., Fl. S. St 208; Mac., Fl. Can. II, 211; Gray, Syn. Fl. I, 2, 145.

North America: N. S., N. Br., Q., Ont. to Georgian bay; S. to N. J. and N. Car.; W. to Minn., Mo., Tenn., Ga.

Minn. valley: Throughout; edges of woods and along shaded banks of streams and lakes.

HERB.: *Sheldon 23*, Elysian; *Sheldon 656*, Waseca; *Sheldon 1276*, Lake Benton; *Taylor 1043*, Glenwood; *Sandberg 300*, Vasa; *Kassube 130*, Minneapolis; *Herrick 149*, Minneapolis; *Taylor 1164*, Glenwood; *Herb. Wickersheim 72*, Lake Park, Becker Co., *73*, Lake Benton; *Herb. Moyer 123*, Montevideo.

Solidago caesia LINN. Spec. 879 (1753).

S. flexicaulis LINN. Herb.

Wats. and Coult., Gray's Man. 6 ed. 247; Britt., Fl.N. J. 132; Upham, Fl. Minn. 75; Chap., Fl. S. St. 209; Mac., Fl. Can. II, 211; Cov., Fl. Ark. 190; Gray, Syn. Fl. I, 2. 145; Coult., Fl. Tex. 188.

North America: Ont. to Fla.; W. to Minn., Ill., Ky., Ark. and Tex.

Minn. valley: N. E. district; infrequent; moist woods and banks.

HERB.: *Sandberg 301*, Red Wing; *Herrick 150*, Minneapolis.

HAPLOPAPPUS CASS. Dict. 56, 168 (1834).

Prionopsis NUTT. Trans. Phil. Soc. 2, VII, 329 (1843).
Pyrrocoma HOOK. Fl. Bor.-Am. I, 306 (1833).
Homopappus NUTT. l. c. 330 (1843).
Hoorebekia CORNELISS. ex DC. Prodr. V, 346 (1836).
Stenotus NUTT. l. c. 334 (1843).
Isopappus T. and G. Fl. Am. II, 239 (1841).
Chroilema BERNH. Hort. Erf. (1840).
Macronema NUTT. l. c. 331 (1843).

Baillon, *Hist. Pl.* VIII, 156 (*sub Hysterionica* Willd.); Benth. and Hook., *Gen. Pl* II, 253; Durand. *Ind. Gen. Phan.* 193; Engler and Prantl. *Nat. Pflanz.* IV, 5, 150 (Hoffmann).

Living species: 100±; 60 (B. and H.); Western N. and S. America, Canada to Patagonia. Especially abundant in Chile. N. America and Mexico, 50±, E. Sts., 3; Canada, 6; Rocky mts., 18; California, 22; Pl. King, 14; Pl. Wheel., 15; W. Tex., 9

Haplopappus spinulosus (PURSH) DC. Prodr. V, 347 (1836).

Amellus(?) *spinulosus* PURSH, Fl. Am. 564 (1814).
Starkea pinnata NUTT. Gen. II, 169 (1818).
Diplopappus pinnatifidus HOOK. Fl. Bor.-Am. II, 22 (1840).
Dieteria spinulosa NUTT. Trans. Amer. Phil. Soc. VII, 301 (1841).

Wats. and Coult., Gray's Man. 6 ed. 245; Webb., Fl. Neb. 149; Coult., Fl. Colo., 148; Mac., Fl. Can. I, 209; Upham, Fl. Minn. 77; Roth., Wheel. Exp. 143; Wats., King Exp. 422; Engl. Hoffmann, Nat. Pflanz. IV, 5, 151; Gray, Syn. Fl. I, 2, 130; Gray, Suppl. Syn. I, 2, 446; Coult., Fl. Tex. 186.

North America: Rockies in Can. to 54° N. lat.; S. to Colo., Neb., Arizona, Tex. and Mex.; E. to Saskatchewan, Dak. and Minn.

Minn. valley: S. W. district; infrequent; plains and high knolls.

BOLTONIA L'HER. Sert. Angl. 27 (1788).

Asteromoea BLUME, Bij. 901 (1826).
Hisutsua DC. Prodr. VI, 44 (1837).
Dichaetophora A. GRAY, Pl. Fendl. 73 (1849).

Baillon, *Hist. Pl.* VIII, 34 (*sub Aster*); Benth. and Hook., *Gen. Pl* II, 269; Durand, *Ind. Gen. Phan.* 196; Engler and Prantl, *Nat. Pflanz.* IV, 5, 161 (Hoffmann).

Living species: 7 in N. America and Malay Archipelago to Japan and China; U. S., 4; E. Asia, 3; Canada, 3; E. Sts., 3; S. Sts., 3; S. Tex., 1; W. Tex., 1.

Boltonia asteroides (LINN.) L'HER. Stirp. (1788).

Matricaria asteroides LINN. Mant. 116 (1767).
M. glastifolia HILL. Hort. Kew. 19 (1768).
Boltonia glastifolia L'HER. Stirp. (1788).
Chrysanthemum carolinianum WALT. Fl. Car. 204 (1788).

Wats. and Coult., Gray's Man. 6 ed. 254; Webb., Fl. Neb. 148; Chap., Fl. S. St. 208; Upham, Fl. Minn. 74; Mac., Fl. Can. II, 332; Gray, Syn. Fl. I, 2, 166.

North America: Man. and Minn. to Neb. and Mo.; E. to Penn., N. Car. and Fla.

Minn. valley: Throughout, especially W. and S. W. districts; rich soil and edges of woods.

HERB.: *Sheldon 1421*, Lake Benton; *Taylor 1186*, Glenwood; *Juni 8*, Alexandria; *Oestlund 91*, Minneapolis; *Sandberg 299*, Red Wing; *Herb. Wickersheim 71*, Ash lake, Lincoln Co.; *Herb. Moyer 122*, Montevideo.

ASTER LINN. Gen. 652 (1737).

Sericocarpus NEES, Gen. Ast. 148 (1818).

Biotia, Heliastrum, Heterochaeta, Arctogeron, Turczaninowia, Noticastrum, Galatella DC. Prodr. V (1836).

Diplopappus, Galatea, Linosyris, Crinitaria CASS. Dict. XIII, seq. (1834).

Xylorhiza and **Eucephalus** NUTT. Trans. Phil. Soc. 2, VIII, 298 (1841).

Symphyotrichum, Machaeranthera, Doellingera, Tripolium, Callimeris NEES, Ast. (1832).

Dieteria NUTT. l. c. 300 (1841).
Rhinactina LESS. Linn. VI, 149 (1832).
Homostylium NEES, Linn. XVIII, 513 (1844).
Bellidiastrum MICHELI, Nov. Gen. 29 (1729).
Margarita GAUD. Helv. V, 335 (1829).
Hersilea KLOTZSCH, Waldem. Reis. Bot. 75 (1843?).
? **Psychrogeton** BOISS. Fl. Or. III, 156 (1843).
Amellus ADANS. Fam. Pl. II, 124 (1763).

Pinardia NECK. Elem. I, 5 (1790).
Crinita MOENCH, Meth. (1794).

Baillon, *Hist. Pl.* VIII, 135; Benth. and Hook., *Gen. Pl.* II, 270, 271; Durand, *Ind. Gen. Phan.* 196; O. Kuntze (includes *Solidago*), *Rev. Gen.* I, 309; Engler and Prantl, *Nat. Pflanz.* IV, 5, 161 (Hoffmann).

Living species: 350 described, 250 reduced. N. and S. America, Europe, Asia, S. Africa, and closely related forms perhaps to be referred to the genus in Australia. Russia, 20; Europe, 10; North America 150, (124, Gray Syn.); Canada, 60–70; Rocky mts., 50; E. Sts., 60; S. Sts., 50; California, 20; Pl. Wheel., 20; Pl. King, 20; W. Tex., 25.

Aster ptarmicoides (NEES) T. and G. Fl. II, 160 (1841).
Doellingeria ptarmicoides NEES, Syn. Ast. 183 (1818).
Chrysopsis alba NUTT. Gen. II, 152 (1818).
Heliastrum album DC. Prodr. V, 264 (1836).
Diplopappus albus HOOK. Fl. Bor.-Am. II, 21 (1840).
Aster albus EAT. and WRIGHT. Man. 146 (1840).

Wats. and Coult., Gray's Man. 6 ed. 264; Mac., Fl. Can. I, 228; Coult., Fl. Colo. 165; Upham, Fl. Minn. 73; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 198.

North America: Ont. and N. Eng. to Saskatchewan, Assiniboia and N. W. T. to 49° N. lat.; S. to Minn., Colo. and Arkansas.

Minn. valley: Throughout at higher levels; fields, prairies, high bluffs and rocky headlands.

HERB.: *Sheldon 1254*, Lake Benton; *Taylor 1007*, Glenwood; *Juni 7*, Knife river; *Juni 8*, Little Marais; *Kassube 126*, Minneapolis; *Bailey 517*, Agate bay; *Roberts 59*, Little Marais; *Leiberg 32*, Blue Earth Co.; *Holzinger 112*, Winona Co.; *Sandberg 292*, Goodhue Co.; *MacM.* and *Sheld. 19*, Brainerd; *Herb. Wickersheim 69*, Idlewild, Lincoln Co.; *Herb. Moyer 116*, Minnesota bluffs, near Montevideo.

Aster umbellatus MILL. Dict. ed. 8, 2 (1768).
A. amygdalinus LAM. Enc. Meth. I, 305 (1783).
Chrysopsis amygdalina NUTT. Gen. II, 153 (1818).
Diplopappus umbellatus T. and G. Fl. II, 183 (1841).
D. amygdalinus T. and G. Fl. II, 153 (1841) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 263; Britt., Fl. N. J. 140; Chap., Fl. S. St. 207; Mac., Fl. Can. I, 229; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 196; Coult., Fl. Tex. 196.

North America: Newf., Anticosti, N. S., N. Br. to N. J., Tenn. and Ga.; W. to Saskatchewan, Minn. and Ark.

Minn. valley: Throughout, principally W. districts; moist woods and shaded banks of streams and lakes.

HERB.: *Taylor 991*, Glenwood; *Taylor 1015*, Glenwood; *Taylor 1045*, Glenwood; *Sheldon 1157*, New Ulm;—all in var.

pubens Gray; *Leiberg 33,* Blue Earth Co.; *Bailey 473,* Agate Bay;—Type; *Bailey 190,* Vermilion lake; *Arthur 66,* Vermilion lake—also var. *pubens* Gray.

Aster puniceus LINN. Spec. 875 (1753).

A. hispidus LAM. Enc. Meth. I, 306 (1783).
A. amoenus LAM. Enc. Meth. I, 306 (1783).

Wats. and Coult., Gray's Man. 6 ed. 263; Britt., Fl. N. J. 139; Chap., Fl. S. St. 204; Upham, Fl. Minn. 73; Mac., Fl. Can. I, 226; Coult., Fl. Colo. 164; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 195; Webb., Appx. Neb. 43.

North America: Atl. to Pac. in Can.; S. in E. U. S. to N. Car. and Ga.; W. to Minn., Dak., Neb. and Mont. to Colo.

Minn. valley: Especially in W. districts, but probably throughout; low places and edges of swampy woods.

HERB.: *Taylor 1092,* Glenwood; *Sheldon 1514,* Lake Benton; *Sheldon 1554,* Verdi, Lincoln Co.; *Herb. Wickersheim 65,* Ash lake, Lincoln Co.; *Wickersheim 137,* Ash lake, Lincoln Co.

Aster puniceus LINN. var. **lucidus** (WEND.).

A. lucidus WEND. Ind. Sem. Marb. (1832).
A. puniceus var. *vimineus* T. and G. Fl. II, 140 (1841).
A. puniceus var. *lucidulus* GRAY, Syn. Fl. I, 2, 195 (1886).

Wats. and Coult., Gray's Man. 6 ed. 263; Upham, Fl. Minn. 73; Mac., Fl. Can. II, 333.

North America: E. Q. to N. Eng.; W. to Ills., Wisc. and Minn.

Minn. valley: W. and S. W. districts; rare; wet or low places.

HERB.: *Sheldon 1335,* Lake Benton.

Aster novabelgii LINN. Spec. 877 (1753).

A. serotinus MILL. Dict. (1768).
A. floribundus WILLD. Spec. III, 2048 (1803).
A. laxus T. and G. Fl. II, 134 (1841).
A. longifolius GRAY, Man. 5 ed. 233 (1867).

Wats. and Coult., Gray's Man. 6 ed. 262; Britt., Fl. N. J. 138; Webb., Fl. Neb. 148; Mac., Fl. Can. I, 225, 545; Chap., Fl. S. St. 203; Upham, Fl. Minn. 72; Engl. Hoffmann, Nat. Pflanz. IV. 5, 163; Gray, Syn. Fl. I, 2, 189.

North America: N. S.?, N. Br.? and Bow river reg. to Ga. and S. Car.; N. J. to Minn. and Neb.

Minn. valley: S. central districts and W. to Dakota line; rare; low places along streams and in meadows.

Aster longifolius LAM. Enc. Meth. I, 306 (1783) *chiefly*.

A. paniculatus LAM. in Herb. Par.
A. aestivus AIT. Hort. Kew. III, 203 (1789).
A. salicifolius WILLD. Herb.
A. floribundus WILLD. Herb. Par. (1814).

? *A. hiemalis* NEES, Ast. 77 (1832).
A. virgineus NEES, Ast. 88 (1832).
? *A. squarrulosus* NEES, Ast. 86 (1832).
A. laxifolius HOOK. Fl. I, (1833).
A. longifolius var. *villicaulis* GRAY, Syn. Fl. I, 2, 189 (1886).

Wats. and Coult., Gray's Man. 6 ed. 262; Gray, Syn. Fl. I, 2, 188; Upham, Fl. Minn. 72; Coult., Fl. Colo. 161, *partly;* Mac., Fl. Can. I, 226.

North America: Labrador, N. N. Eng, to Ont., Man. and Great Slave lake; S. to Mont., Minn. and Colo.

Minn. valley: N. districts, E. and W.; woods and edges of thickets.

HERB.: *Taylor 1115,* Glenwood; *Ballard 823,* Page lake, Carver Co.; *Ballard 795,* Goose lake, Carver Co.; *Ballard 716,* Benton. Carver Co.; *Ballard 840,* Patterson lake, Carver Co.; *Bailey 266,* St. Louis river; *Sandberg 608,* Red Wing; *Oestlund 352,* Minneapolis.

Aster junceus AIT. Hort. Kew. III, 204 (1789).

A. salicifolius RICH. App. Frankl. Journ. 478 (1823).
A. bellidiflorus HOOK. Fl. Bor.-Am. II, 2 (1840).
A. laxifolius HOOK. Fl. Bor.-Am. II, 10 (1840).
A. laxifolius var. *borealis* T. and G. Fl. II, 138 (1841).
A. laxifolius var. *laetiflorus* T. and G. Fl. II, 138 (1841).
A. borealis PROVANCH. Fl. Can. I, 308 (1862).
A. aestivus GRAY, Man. 5 ed. 233 (1867) *mainly.*

Wats. and Coult., Gray's Man. 6 ed. 262; Britt., Fl. N. J. 139; Coult., Fl. Colo. 161; Upham, Fl. Minn. 72; Mac., Fl. Can. I, 545; Gray, Syn. Fl. I, 2, 188.

North America: Saskatchewan to N. S. and Brit. Col. to lat. 64° N. and at Hudson Bay; S. to N. Y. and N. J.; W. to Minn., Ohio and Mich.

Minn. valley: Reported as occurring throughout; rare; shaded places and along streams.

Aster salicifolius LAM.? Enc. Meth. I, 306 (1783).

? *A. eminens* WILLD. Enum. 886 (1809).
A. praealtus POIR. Suppl. I, 493 (1810).
A. rigidulus DESF. Cat. 122 (1815).
A. obliquus NEES, Syn. Ast. 76 (1818).
? *A. carneus* NEES, Syn. Ast. 96 (1818).
A. stenophyllus LINDL. DC. Prodr. V, 242 (1836).
A. laxifolius HOOK. Fl. Bor.-Am. II, 10 (1840) *pro parte.*
A. greenei T. and G. Fl. II, 134 (1841).

Wats. and Coult., Gray's Man. 6 ed. 261; Britt., Fl. N. J. 138; Coult., Fl. Colo. 161; Webb., Fl. Neb. 148; Upham., Fl. Minn. 72; Mac., Fl. Can. I, 224; Gray, Syn. Fl. I, 2, 188; Hart., Fl. Scand. I, 554?; Coult., Fl. Tex. 196?.

North America: N. S., Ont., Man. and Saskatchewan to N. Eng., N. J. and W. to Minn., Dak., Mont., Neb. and Tex.

Minn valley: Reported in W. districts, both N. and S.; rare; moist or low fields and meadows.

Aster paniculatus LAM. Enc. Meth. I, 306 (1783).

A. salicifolius SCHOLL. Fl. Barb. Suppl. 328 (1785).
A. salignus WILLD. Spec. III, 240 (1800).
A. dracunculoides WILLD. Spec. III, 2050 (1803).
A. simplex WILLD. Enum. 887 (1809).
A. laxus WILLD. Enum. 886 (1809).
A. strictus POIR. Suppl. 498 (1810).
A. carneus NEES, Syn. Ast. 27 (1818).
A. lamarckianus NEES, Syn. Ast. 100 (1818).
A. recurvatus WILLD. *in Herb.*
A. parviflorus HOOK. Fl. Bor.-Am. II, 11 (1841).
A. tenuifolius T. and G. Fl. II, 131 (1840).

Wats. and Coult., Gray's Man. 6 ed. 261; Britt., Fl. N. J. 138; Chap., Fl. S. St. 203; Mac., Fl. Can. I, 224; Coult., Fl. Colo. 161; Roth., Wheel. Exp. 150; Wats., King Exp. 140; Cov., Fl. Ark. 192; Gray, Syn. Fl. 187; Webb., Appx. Neb. 43.

North America: N. Br. to Saskatchewan and Mont.; S. to N. Eng., N. J. and La.; W. to Minn., Neb. and Ark.

Minn. valley: Throughout; principally in W. districts; shaded banks or edges of woods.

HERB.: *Sheldon 1425,* Lake Benton; *Roberts 58,* Stewart river; *Sandberg 290,* Red Wing; *Bailey 217,* Vermilion lake; *Taylor 1091,* Glenwood; *Sheldon 925,* Sleepy Eye; *Herb. Moyer 265,* Montevideo.

Aster lateriflorus (LINN.) BRITT. Trans. N. Y. Acad. IX, (1889).

Solidago lateriflora LINN. Spec. 879 (1753).
Aster diffusus AIT. Hort. Kew. III, 205 (1789).
A. tradescanti MICHX. Fl. II, 115 (1803).
A. miser NUTT. Gen. II, 158 (1818).
A. parviflorus DARL. Fl. Cestr. 446 (1840).
A. divergens HOOK. Fl. Bor.-Am. II, 11 (1840).
A. pendulus HOOK. Fl. Bor.-Am. II, 12 (1840).
A. glomerellus T. and G. Fl. II, 129 (1841).

Wats. and Coult., Gray's Man. 6 ed. 261; Upham, Fl. Minn. 72; Chap., Fl. S. St. 203?; Britt., Fl. N. J. 138; Mac., Fl. Can. I, 224; Gray, Syn. Fl. I, 2, 186; Coult., Fl. Tex. 196.

North America: N. S., N. Br., Q., Ont. and Minn. to Fla. and Tex.

Minn. valley: Reported as occurring throughout; fields, edges of woods and along streams.

HERB.: *Sandberg 289,* Red Wing; *Roberts 57,* Beaver bay.

Aster vimineus LAM. Enc. Meth. I, 306 (1783).

A. tradescanti LINN. Herb. Cliff?.

A. secundiflorus DESF. Hort. Par. (1815).
A. multiflorus NUTT. Gen. II, 155 (1818).
A. fragilis NEES, Ast. 101 (1818).
A. tenuifolius ELL. Sk. II, 347 (1824).
A. diffusus DC. Prodr. V, 242 (1836) *in part.*

Wats. and Coult. Gray's Man. 6 ed. 260; Britt., Fl. N. J. 138; Chap., Fl. S. St. 203?; Mac., Fl. Can. I, 226?, 546; Cov. Fl. Ark. 192; Gray, Syn. Fl. I, 2, 186.

North America: Ont. to N. Eng. and Va.; W. to Minn., Mo., Ark. and Fla.

Minn valley: Reported from N. edge and said to extend W. and S.; doubtful; moist banks and edges of woods or marshes.

Aster dumosus LINN. Spec. 873 (1753).

A. sparsiflorus MICHX. Fl. II, 112 (1803).
A. fragilis LINDL. DC. Prodr. V, 246 (1836).

Wats. and Coult., Gray's Man. 6 ed. 260; Britt., Fl. N. J. 138; Mac., Fl. Can. I, 224, 546; Chap., Fl. S. St. 203; Cov., Fl. Ark. 191; Gray, Syn. Fl. I, 2, 185; Coult., Fl. Tex. 196.

North America: N. Eng. and Ont. to Minn.; S. to Fla., Tex. and Ark.

Minn. valley: Reported from S. E. and S. central districts; rare; woods and thickets; banks of streams.

HERB.: *Sandberg 288*, Red Wing.

Aster multiflorus AIT. Hort. Kew. III, 203 (1789).

A. ciliatus MUHL. Willd. Spec. III, 2024 (1803).
A. ericoides var. *multiflorus* PERS. Syn. II, 443 (1807).
A. scoparius DC. Prodr. V. 242 (1836).
A. hebecladus DC. Prodr. V, 242 (1836).

Wats. and Coult., Gray's Man. 6 ed. 260; Mac., Fl. Can. I, 223, 544; Webb., Fl. Neb. 148; Britt., Fl. N. J. 138; Coult., Fl. Colo. 161; Chap., Fl. S. St. 202; Roth., Wheel. Exp. 150; Wats., King. Exp. 191; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 185; Coult., Fl. Tex. 195.

North America: Saskatchewan and Brit. Col.? to Mont., Arizona and Mexico; E. to Minn., Neb., Ont., N. Y., N. J., Va., Ga. and Tex.

Minn valley: Throughout; dry places, banks of streams, shores of lakes; gravelly or sandy soil.

HERB.: *Sheldon 1106*, Springfield; *Taylor 1068*, Glenwood; *Sheldon 1331*, Lake Benton; *Sandberg 287*, Red Wing; *Herb. Sheld. 1815*, Minneapolis; *Herb. Wickersheim 64*, Idlewild, Lincoln Co.; *Herb. Moyer 114*, Montevideo.

Aster ericoides LINN. var. **villosus** (MICHX.) T. and G. Fl. II, 123 (1841).

A. villosus MICHX. Fl. N. Am. II, 113 (1803).
A. pilosus WILLD. Spec. III, 2055 (1803).

Wats. and Coult., Gray's Man. 6 ed. 260; Upham, Fl. Minn. 71; Mac., Fl. Can. I, 223; Chap., Fl. S. St. 202; Mac., Fl. Can. I, 544; Gray, Syn. Fl. I, 2, 184.

North America: Ont. to Minn. and Iowa; E. to N. Y., Ohio, Fla. and Miss.?

Minn. valley: S. central district and E. edge; rare; dry places and sunny banks of streams.

HERB.: ?*Holzinger 110* Winona Co.

Aster polyphyllus WILLD. Enum. 888 (1809).

A. tenuifolius NEES, Syn. Ast. 119 (1818) *in part.*

Wats. and Coult. Gray's Man. 6 ed. 216; Chap., Fl. S. St. 203; Upham, Fl. Minn. 72; Gray, Syn. Fl. I, 2, 184.

North America: N. Vt. to Wisc. and Minn.; S. to N. Car.

Minn. valley: Reported from N. W. and S. central districts; low places and along streams.

Aster laevis LINN. Spec. 876 (1753).

A. rubricaulis LAM. Enc. Meth. I, 305 (1783).
A. amplexicaulis MUHL. Willd. Spec. III, 2046 (1803).
A. cyaneus HOFFM. Phyt. Blatt. 71 (1803).
A. pennsylvanicus POIR. Suppl. I, 498 (1810).
A. glaucescens and *impolitus* NEES, Syn. 23 (1818).
A. concinnus HOOK. Fl. II, 13 (1840).
A. strictus var. *angustifolius* HOOK. Fl. Bor.-Am. II, 13 (1840).

Wats. and Coult., Gray's Man. 6 ed. 259; Britt., Fl. N. J. 137; Webb., Fl. Neb. 148; Mac., Fl. Can. I, 221; Upham, Fl. Minn. 71; Coult., Fl. Colo. 160; Chap., Fl. S. St. 200; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 183.

North America: Ont. to Saskatchewan and Rocky mts. to lat. 58° N. on Peace river; S. to N. Eng., N. J. and Va.; W. to Minn., Kan., Neb. and Ark.

Minn. valley: Throughout; at higher levels; dry woods and thickets.

HERB: *Taylor 1124*, Glenwood; *Sandberg 282*, Red Wing; *Sandberg 283* Red Wing; *Herrick 143*, Minneapolis; *Herb. Wickersheim 63*, Idlewild, Lincoln Co.; *Herb. Moyer 113*, Montevideo; *Winchell 21*, Lake Minnetonka.

Aster drummondii LINDL. DC. Prodr. V, 246 (1836).

Wats. and Coult., Gray's Man. 6 ed. 259; Webb., Fl. Neb. 148; Upham, Fl. Minn. 71; Cov., Fl. Ark. 191; Gray, Syn. Fl. I, 2, 182; Coult., Fl. Tex. 195.

North America: Ill. to Minn., Neb., Kan. and Tex.

Minn. valley: Reported from S. E. district; no Minn. specimens seen.

Aster sagittaefolius WILLD. Spec. III, 2035 (1803).

A. paniculatus MUHL. Cat. (1813).
A. hirtellus and *urophyllus* LINDL. DC. Prodr. V, 233 (1836).

Wats. and Coult., Gray's Man. 6 ed. 259; Upham, Fl. Minn. 71; Britt., Fl. N. J. 138; Mac., Fl. Can. I, 222; Webb., Fl. Neb. 148; Chap., Fl. S. St. 202; Coult., Fl. Colo. 160; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 182.

North America: N. Br., Ont., N. Y., N. J. and Penn. to Ky. and Fla ; W. to Minn., Dak., Neb. and Ark.

Minn. valley: N. edge, N. E. and N. W. districts; higher levels; dry places and edges of woods.

HERB.: *Sandberg 286*, Red Wing; *Bailey 458*, Mud lake; *Bailey 269*, Vermilion lake; *Bailey 270*, Vermilion lake; *Herrick 144*, Minneapolis; *Holtz 17*, Minneapolis.

Aster cordifolius LINN. Spec. 875 (1753).

A. paniculatus and *heterophyllus* WILLD. Spec. III, 2035 (1803).

A. paniculatus, *heterophyllus* and *cordifolius* NEES, Ast. (1818).

Wats. and Coult., Gray's Man. 6 ed. 259; Webb., Fl. Neb. 148; Britt., Fl. N. J. 137; Mac., Fl. Can. I, 222; Chap., Fl. S. St. 202; Upham, Fl. Minn. 71; Cov., Fl. Ark. 191; Gray, Syn. Fl. I, 2, 182.

North America: N. S., N. Br., Q., Ont. to Georgian bay; S. to Va., Ky., Neb., Mo. and Ark.

Minn. valley: Throughout the forest district; woods and thickets.

HERB.: *Sandberg 285* Red Wing.

Aster undulatus LINN. Spec. 875 (1753).

A. paniculatus NUTT. Gen. II, 56 (1818).

A. sagittaefolius ELL. Sk. II, 362 (1824).

A. diversifolius DC. Prodr. V, 234 (1836).

Wats. and Coult., Gray's Man. 6 ed. 258; Webb., Fl. Neb. 148; Upham, Fl. Minn. 71; Mac., Fl. Can. I, 222; Chap., Fl. S. St. 201; Britt.. Fl. N. J. 137; Mac., Fl. Can. I, 544; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 181.

North America: N. Br., Ont. to N. J., N. Car., Fla.; W. to Minn., Ky., Ark. and Neb.

Minn. valley: S. central district and N. W.; rare; dry woods and thickets.

HERB.: ?*Taylor 1014*, Glenwood.

Aster azureus LINDL. DC. Prodr. V, 244 (1836).

A. oolentangiensis RIDD. Cat. Pl. W. S. (1835).

Wats. and Coult., Gray's Man. 6 ed. 258; Upham, Fl. Minn. 71; Mac., Fl. Can. I, 221; Chap., Fl. S. St. 201; Mac., Fl. Can. I, 544; Webb., Appx. Neb. 43; Coult., Fl. Tex. 195.

North America: Ont. to N. Y.; W. to Minn., Ohio, Mo., Neb., Ark. and Tex.

Minn. valley: Throughout; prairies and borders of woods.

HERB.: *Sandberg 284*, Red Wing; ?*Bailey 507*, Agate bay; *Taylor 1183*, Glenwood.

Aster patens AIT. Hort. Kew. III, 201 (1789).

A. amplexicaulis MICHX. Fl. N. Am. II, 114 (1803).

A. undulatus ELL. Sk. II, 361 (1824).

A. patentissimus LINDL. DC. Prodr. V, 232 (1836).

Wats. and Coult., Gray's Man. 6 ed. 258; Britt., Fl. N. J. 137; Webb., Fl. Neb. 148; Mac., Fl. Can. I, 221; Chap., Fl. S. St. 200; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 180; Coult., Fl. Tex. 195.

North America: N. Br., Q., Ont. to Mass., N. J., Va. and Fla.; W. to Minn., Neb. and Ark.

Minn. valley: Reported from N. edge and forest district to Blue Earth Co.; rare; dry places and banks of streams.

HERB.: *Sandberg 281*, Red Wing.

Aster sericeus VENT. Hort. Cels. 33 (1800).

A. argenteus MICHX. Fl. N. Am. II, 111 (1803).

Wats. and Coult., Gray's Man. 6 ed. 257; Webb., Fl. Neb. 148; Upham, Fl. Minn. 71; Mac., Fl. Can. I, 220; Chap., Fl. S. St. 199; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 179; Coult., Fl. Tex. 194.

North America: S. Man., Minn., Neb. and Wisc.; S. to Ky., N. Car., Tenn. and Tex.

Minn. valley: Throughout; common; prairies, dry hillsides and banks.

HERB.: *Sheldon 735*, Sleepy Eye; *Taylor 742*, Glenwood; *Sheldon 1457*, Pipestone; *Taylor 1097*, Glenwood; *Sheldon 1323*, Lake Benton; *Leonard 24*, Minnehaha Park; *Kassube 125*, Minneapolis; *Sandberg 280*, Red Wing; *Herb. Wickersheim 62*, Idlewild, Lincoln Co.; *Herb. Moyer 112*, Montevideo.

Aster novae-angliae LINN. Spec. 875 (1753).

A. amplexicaulis LAM. Enc. Meth. I, 304 (1783).

A. spurius WILLD. Spec. III, 2032 (1803).

Wats. and Coult., Gray's Man. 6 ed. 257; Britt., Fl. N. J. 139; Webb., Fl. Neb. 148; Coult., Fl. Colo. 159; Chap., Fl. S. St. 205; Mac., Fl. Can. I, 226, 545; Upham, Fl. Minn. 73; Cov., Fl. Ark. 192; Engl. Hoffmann, Nat. Pflanz. IV, 5, 163; Gray, Syn. Fl. I, 2, 178.

North America: Man., Georgian Bay and Q. to Minn., Dak., Neb., Colo., Ark., Tenn. and S. Car.

Minn. valley: Throughout; abundant; moist woodland, river banks and around lake shores.

HERB.: *Taylor 955*, Glenwood; *Sheldon 1503*, Lake Benton; *Sandberg 291*, Red Wing; *Herb. Sheld. 1816*, Minneapolis; *Herb. Wickersheim 68*, Ash lake, Lincoln Co.

Aster oblongifolius NUTT. Gen. II, 156 (1818).

A. biennis TORR. Ann. Lyc. N. Y. II, 122 (1834).

A. multiceps LINDL. DC. Prodr. V, 237 (1836).

Wats. and Coult., Gray's Man. 6 ed. 257; Webb., Fl. Neb. 148; Coult., Fl. Colo. 160; Upham, Fl. Minn. 73; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 178; Coult., Fl. Tex. 194.

North America: Penn. and Va. to Minn., Neb., Dak., Colo., Kan., Ark. and Tex.

Minn. valley: Throughout, but local; more abundant W. than E.; banks and hillsides.

HERB.: *Holzinger 111*, Winona Co.; *Sheldon 1444½*, Pipestone City; *Sheldon 1324*, Lake Benton; *Herb. Wickersheim 66*, Idlewild, Lincoln Co.; *67*, Ash lake, Lincoln Co.; *Herb. Moyer 115*, Montevideo.

Aster macrophyllus LINN. Spec. 2 ed. 1232 (1762).

Eurybia macrophylla CASS. Dict. XXXVII, 487 (1826).

E. jussiei CASS. Dict. XXXVII, 487 (1826).

Biotia schroeberi, latifolia, glomerata, macrophylla DC. Prodr. V, 265 (1836).

Wats. and Coult., Gray's Man. 6 ed. 256; Britt., Fl. N. J. 136; Upham, Fl. Minn. 70; Webb., Fl. Neb. 148; Mac., Fl. Can. I, 219; Chap., Fl. S. St. 198; Engl. Hoffmann, Nat. Pflanz. IV, 5, 162; Gray, Syn. Fl. I, 2, 175.

North America: N. S., N. Br., Q., Ont. to S. Man.; S. to N. Eng., N. J. and Ga.; W. to Minn., Neb. and Kan.

Minn. valley: Reported from N. E. district and probably in Leaf hill district; woods and along streams.

HERB.: *Bailey 297*, Vermilion Lake; *Bailey 462*, Agate bay; *Bailey 503*, Agate bay.

Aster asteroides (LINN.).

Conyza asteroides LINN. Spec. 861 (1753).

Aster conyzoides WILLD. Spec. III, 2043 (1803).

A. marilandicus MICHX. Fl. N. Am. II, 108 (1803).

Sericocarpus conyzoides NEES, Ast. 148 (1832).

S. asteroides B. S. P. Cat. N. Y. (1888).

Wats. and Coult., Gray's Man. 6 ed. 254; Chap., Fl. S. St. 197; Gray, Syn. Fl. I, 2, 171; Britt., Fl. N. J. 146.

North America: Maine to Ga. and Fla.; W. to Ohio and Minn.

Minn. valley: Reported from New Ulm; S. central region; local; dry soil and sunny banks.

Aster divaricatus LINN. Spec. 873 (1753).

A. corymbosus AIT. Hort. Kew. III, 207 (1789).

A. cordifolius MICHX. Fl. N. Am. II, 114 (1803).

Eurybia corymbosa CASS. Dict. XXXVII, 487 (1826).

Biotia corymbosa DC. Prodr. V, 265 (1836).

Wats. and Coult., Gray's Man. 6 ed. 255; Britt., Fl. N. J. 136; Mac., Fl. Can. I, 219; Upham, Fl. Minn. 70; Chap., Fl. S. St. 198; Engl. Hoffmann, Nat. Pflanz. IV, 5, 162; Gray, Syn. Fl. I, 2, 174.

North America: W. Q. to S. Man.; S. to N. J. and Ga.; W. to Minn. and Iowa.

Minn. valley: Reported from N. E. district; rare; wooded banks and in glades.

ERIGERON LINN. Gen. 653 (1737).

Trimorphœa CASS. Bull. Phil. (1817).
Leptostelma DON, Sweet. Brit. Fl. Gard. 2, 38 (1829).
Stenactis NEES, Gen. Ast. 273 (1832).
Woodvillea DC. Prodr. V, 318 (1836).
Phalacroloma CASS. Dict. XXXIX, 404 (1834).
Polyactis and **Polyactidium** LESS. Syn. Comp. 188 (1832).
Conyzella RUPR. Sert. Tsch. 51 (——).
Heterochaeta DC. Prodr. V, 282 (1836).
Gusmania REMY, C. Gay, Fl. Chil. IV, 12 (1845).
Astradelphus REMY, Ann. Sci. Nat. ser. 3, XII, 185 (1849).
Terranea COLLA, Mem. Acad. Tur. XXXVIII, 11 (1835).
Vittadinia A. RICH. Fl. N. Zeal. 250 (1834).
Microgyne LESS. Syn. 190 (1832).
Eurybiopsis DC. Prodr. V, 260 (1836).
Tetramolopium NEES, Ast. 202 (1832).
Brachyactis LED. Fl. Ross. II, 495 (1846).
Lachnophyllum BUNGE, Rel. Lehm. 151 (1848).
Nidorella CASS. Dict. XXXVII, 469 (1834).
Conyza LINN. Gen. 950 (1737) *part.*
Eschenbachia MOENCH, Meth. 573 (1794).
Fimbrillaria CASS. Dict. XVII, 54 (1826).
Dimorphanthus CASS. l. c. XIII, 254 (1826).
Laennecia CASS. l. c. XXI, 91 (1834).
Achaetogeron A. GRAY, Pl. Fendl. 72 (1849).

Baillon, *Hist. Pl.* VIII, 143; Benth. and Hook., *Gen. Pl.* II, 279, 280, 282; Durand, *Ind. Gen. Phan.* 197; Engler and Prantl, Nat. Pflanz. IV, 5, 164 (Hoffmann).

Living species: 200±; 100 (B. and H.); 110 (Durand); 150 (Hoffmann); about half of these are in N. America, most of the remainder are S. American. The rest are S. African, Australian, Oceanic and old world. It is not clear what should be the limits of this genus. North America, 80±; Canada, 30; Rocky mts., 35; S. Sts., 10; E. Sts., 10; California, 25; Pl. King, 19–20; Pl. Wheel., 20–21; W. Tex., 11.

Erigeron philadelphicus LINN. Spec. 863 (1753).

E. purpureum AIT. Hort. Kew. III, 186 (1789).
E. pulchellus var. *a.* HOOK. Fl. Bor.-Am. II, 19 (1840).
E. purpureus HOOK. Fl. Bor.-Am. II, 19 (1840).

Wats. and Coult., Gray's Man. 6 ed. 266; Britt., Fl. N. J. 140; Webb., Fl. Neb. 148; Chap., Fl. S. St. 206; Upham, Fl. Minn. 74; Mac., Fl. Can. I, 233; Coult., Fl. Colo. 173; Wats., Fl. Calif. II, 331; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 217; Coult., Fl. Tex. 198.

North America: Calif. and Oregon across continent to Fla. and Tex. and N. to Arctic circle.

Minn. valley: Throughout; moist places and in edges of woodland.

HERB.: *Ballard 35* Carver; *Taylor 137*, Janesville; *Taylor 795*, Glenwood; *Sheldon 1395*, Lake Benton; *Taylor 646*, Minnesota lake; *Taylor 24*, Elysian; *Taylor 346*, Janesville; *Sheldon 896*, Sleepy Eye; *Sheldon 292*, Madison Lake; *Sheldon 526*, Waseca; *Sandberg 296*, Chisago Co.; *Kassube 128*, Minneapolis; *Herrick 147*, Minneapolis; *Arthur 65*, Vermilion lake; *Bailey 285*, Vermilion lake; *Herb. Sheld. 1807*, Ramsey Co.; *1795*, Ft. Snelling; *Herb. Wickersheim 70*, Idlewild; *Herb. Moyer 117*, Montevideo; *118*, Montevideo.

Erigeron pulchellus MICHX. Fl. N. Am. II, 124 (1803).

E. bellidifolius MUHL. Willd. Spec. III, 1958 (1803).

Wats. and Coult., Gray's Man. 6 ed. 266; Britt., Fl. N. J. 140; Chap., Fl. S. St 206; Mac., Fl. Can. I, 233, 547; Upham, Fl. Minn. 74; Wats., King Exp. 151; Cov., Fl. Ark. 192; Gray, Syn. Fl. I, 2, 216.

North America: N. S. to N. J., Tenn. and S. Car.; W. to Q., Ont., Man., Minn. and La.

Minn. valley: Forest district; infrequent; banks and edges of low woodland.

HERB.: *Kassube 127*, Minneapolis; *Herrick 146*, Minneapolis; *Sandberg 294*, Washington Co.; *Sandberg 295*, Chisago lake.

Erigeron glabellus NUTT. Gen. II, 147 (1818).

E. asper NUTT. Gen. II, 147 (1818).

E. pulchellus HOOK. Fl. Bor.-Am. II, 19 (1840) *in part.*

Wats. and Coult., Gray's Man 6 ed. 265; Upham, Fl. Minn. 74; Mac., Fl. Can. I, 232: Coult., Fl. Colo. 169; Wats., King Exp. 150; Gray, Syn. Fl. I, 2, 209.

North America: Man. and Saskatchewan to Rocky mts. and Alaska; 64° N. lat.; S. to Wisc., Minn., Dak., Mont., Colo. and S. Utah.

Minn. valley: Reported from S. E. district; rare or doubtful; fields and dry prairies

Erigeron ramosus (WALT.) B. S. P. Cat. N. Y. (1888).

Doronicum ramosum WALT. Fl. Car. 205 (1788).

Erigeron strigosus MUHL. Willd. Spec. III, 1956 (1803).

E. nervosum PURSH, Fl. Am. II, 148 (1814).

E. ambiguus NUTT. Gen. II, 147 (1818).

E. philadelphicus BART. Mat. Med. 20 (1820).

E. integrifolius BIGEL, Fl. Bost. ed. 2, 302 (1824).

Phalacroloma obtusifolium CASS. Dict. XXXIX, 405 (1826).

Stenactis ambigua DC. Prodr. V, 299 (1836).

E. strigosus var. *discoideus* ROBBINS, Gray's Man. 5 ed. 237 (1867).

Wats. and Coult., Gray's Man. 6 ed. 265; Britt., Fl. N. J. 140; Mac., Fl. Can. I, 234; Webb., Fl. Neb. 148; Chap., Fl. S. St. 200; Upham, Fl. Minn. 74; Wats., Fl. Calif. II, 331; Coult., Fl. Colo. 173; Cov., Fl. Ark. 192; Engl. Hoffmann, Nat. Pflanz. IV. 5, 164; Gray, Syn. Fl. I, 2, 219; Coult., Fl. Tex. 199.

North America: N. S. to Man., Saskatchewan and N. W. T. to 49° N. lat.; S. to N. Eng., N. J. and Tex.; W. to Minn., Dak., Mont., Oregon, California, Neb., Ark.

Minn. valley: Throughout; waste places and fields.

HERB.: *Ballard 464*, Prior's lake, Scott Co.; *Ballard 386*, Belle Plaine; *Sheldon 1481*, Pipestone City; *Sheldon 649*, Waseca; *Sheldon 750*, Sleepy Eye; *Taylor 354*, Janesville; *Taylor 705*, Glenwood; *Sheldon 530*, Waseca; *Sheldon 1124*, Springfield; *Winchell 9*, Minneapolis; *Oestlund 90*, Minneapolis. *Kassube 129*, Minneapolis; *Holzinger 113*, Winona Co.; *Bailey 161*, Vermilion lake; *Sandberg 298*, Cannon Falls; *Holzinger 114*, Winona Co.; *Herb. Sheld. 2195*, Minneapolis; *Herb. Sheld. 1814*, Cedar lake; *Herb. Moyer 120*, Montevideo; *121*, Montevideo.

Erigeron annuus (LINN.) PERS. Syn. II, 431 (1807).

Aster annuus LINN. Hort. Cliff. and Spec. 875 (1753).
Pulicaria annua GAERTN. Fruct. II, 462 (1791).
Erigeron heterophyllus MUHL. Willd. Spec. III, 1956 (1803).
Diplopappus dubius CASS. Bull. Philom. (1817-1818).
Erigeron strigosus BIGEL. Fl. Bost. 2 ed. 302 (1824).
Phalacroloma acutifolium CASS. Dict. XXXIX, 405 (1826).
Stenactis dubia CASS. Dict. XXXVII, 485 (1826).
Stenactis annua and *strigosa* DC. Prodr. V, 299 (1836).

Wats. and Coult., Gray's Man. 6 ed. 265; Britt., Fl. N. J. 140; Upham, Fl. Minn. 74; Mac., Fl. Can. I, 234; Webb., Fl. Neb. 147; Wats., Fl. Calif. II, 331; Cov., Fl. Ark. 192; Engl. Hoffmann, Nat. Pflanz. IV, 5, 164; Gray, Syn. Fl. I, 2, 219.

Introduced in Germany.

North America: N. S., N. Br. to W. Ont.; S. to N. Eng., N. J. and Va.; W. to Mont., Oregon, California, Neb. and Ark.

Minn. valley: Reported from S. E. edge and N. E. district; absent elsewhere; waste places and roadsides.

HERB.: *Sandberg 297*, Goodhue Co.

Erigeron divaricatus MICHX. Fl. N. Am. II, 123 (1803).

Wats. and Coult., Gray's Man. 6 ed. 265; Webb., Fl. Neb. 147; Coult., Fl. Colo. 174; Upham, Fl. Minn. 74; Cov., Fl. Ark. 192: Gray, Syn. Fl. I, 2, 221; Coult, Fl. Tex. 198.

North America: Colo. to Minn., Neb., Ind. and Tex.

Minn. valley: Reported from S. E. and S. edges; rare; doubtful; localities of *E. canadensis* Linn.

Erigeron canadensis LINN. Spec. 863 (1753).

E. paniculatus LAM. Fl. Fr. (1778).

Senecio ciliatus WALT. Fl. Car. 208 (1788).
Erigeron pusillus NUTT. Gen. II, 138 (1818).
E. strictum DC. Prodr. V, 289 (1836).

Wats. and Coult., Gray's Man. 6 ed. 265; Britt., Fl. N. J. 140; Webb., Fl. Neb. 147; Chap., Fl. S. St. 206; Upham, Fl. Minn. 74; Mac., Fl. Can. I, 235; Coult., Fl. Colo. 174; Wats., Fl. Calif. II, 331; Hook., Fl. Gt. Brit. 205: Gris. Fl. W. I.; Forbes and Hems., Fl. Sin. 418; Led., Fl. Ross. II, 487; Herd., Fl. Eur. Russ. 66; Roth., Wheel. Exp. 152; Wats., King Exp. 147; Cov., Fl. Ark. 192; Engl. Hoffmann, Nat. Pflanz. IV, 5, 164; Gray, Syn. Fl. I, 2, 221; Hart., Fl. Scand. I, 554; Coult., Fl. Tex. 198.

Europe to Caucasus; Siberia and China; intro, in S. Africa; Malay archipelago?.

North America: Throughout continent to Jamaica.

Minn. valley: Throughout; waste places, roadsides and railway embankments.

HERB.: *Taylor 801*, Glenwood; *Sheldon 1591*, Lake Benton; *Ballard 758*, Waconia; *Bailey 271*, St. Louis river; *Oestlund 89*, Minneapolis; *Roberts 60*, Grand Marais; *Herrick 145*, Minneapolis; *Sandberg 293*, Goodhue Co.

ANTENNARIA GAERTN. Fruct. II, 410 (1792).

Baillon, *Hist. Pl.* VIII, 169; Benth. and Hook., *Gen. Pl.* II, 301; Durand, *Ind. Gen. Phan.* 200; Engler and Prantl, *Nat. Pflanz.* IV, 5, 186.

Living species: 15–20; Alpine regions, Europe, Asia, N. and S. America and Australia; extra-tropical. Russia, 5; Europe, 4; Russian Europe, 3; North America, 12; Canada, 7; Rocky mts., 7; E. Sts., 1; California, 7; S. Sts., 1; Pl. King, 4; Pl. Wheel., 2; W. Tex., 1.

Antennaria plantaginifolia (LINN.) HOOK. Fl. Bor.-Amer. I, 329 (1833).

Gnaphalium plantaginifolium LINN. Spec. 882 (1753).
G. plantagineum MURR. Syst. 748 (1774).
G. dioicum var. *plantaginifolium* MICHX. Fl. N. Am. II, 128 (1803).
Antennaria plantaginea DC. Prodr. VI, 269 (1837).

Wats. and Coult., Gray's Man. 6 ed. 267; Britt., Fl. N. J. 141; Webb., Fl. Neb. 147; Upham, Fl. Minn. 86; Mac., Fl. Can. I, 235; Chap., Fl. S. St. 243; Coult., Fl. Colo. 177; Brew. and Wats., Fl. Calif. I, 338; Cov., Fl. Ark. 193; Gray, Syn. Fl. I, 2, 233; Coult., Fl. Tex. 202.

North America: Anticosti, N. S., N. Br. to Pac.; N. to Slave lake and Hudson Bay; S. to Oregon and N. Mex.; E. to Atl. coast and Fla.

Minn. valley: Throughout; grassy knolls or plains; openings in forest; prairies.

HERB.: *Sheldon 210*, Lake Washington, Blue Earth Co.; *Sheldon 627*, Wilton, Waseca Co.; *Sheldon 919*, Sleepy Eye; *Taylor 218*, Janesville; *Taylor 9*, Elysian; *Sheldon 1589*, Lake

Benton; *Herrick 171*, Minneapolis; *Leiberg 42*, Blue Earth Co.; *Kassube 141*, Minneapolis; *Bailey 218*, Vermilion lake; *Sandberg 343*, Red Wing; *Holzinger 132*, Winona Co.; *Holzinger 133*, Winona Co.; *Herb. Sheld. 1716*, Ramsey Co.; *1810*, Minneapolis; *Herb. Wickersheim 82*, Idlewild, Lincoln Co.; *Herb. Moyer 150*, Montevideo.

ANAPHALIS DC. Prodr. VI, 271 (1837).

Baillon, *Hist. Pl.* VIII, 171; Engler and Prantl, *Nat. Pflanz.* IV, 5, 186; Durand, *Ind. Gen. Phan.* 200; Benth. and Hook., *Gen. Pl.* II, 303.

Living species: 30; tropical and temperate Asia; 1 sp. in N. hemisphere throughout, and in N. America (United States). N. America, 1.

Anaphalis margaritacea (LINN.) B. and H. Gen. Pl. II, 303 (1873).

Gnaphalium margaritacea LINN. Spec. 850 (1753).

Antennaria margaritacea R. BR. Trans. Linn. Soc. XII (1817).

Wats. and Coult., Gray's Man. 6 ed. 268; Britt., Fl. N. J. 141; Mac., Fl. Can. I, 237; Upham, Fl. Minn. 86; Chap., Fl. S. St. 243; Coult., Fl. Colo. 177; Brew. and Wats., Fl. Calif. I, 341; Forbes and Hems., Fl. Sin. 425; Led., Fl. Ross. II, 613; Hook., Fl. Gt. Brit. 209; Miyabe, Fl. Kur. 241; Wats., King Exp. 185; Engl. Hoffmann, Nat. Pflanz. IV, 5, 186; Gray, Syn. Fl. I, 2, 233.

N. Asia to Amur., Kamtk., Japan, Saghalin and Kuriles; in var. to Ceylon. Intro.? in Europe.

North America: Newf., Anticosti, N. S. and N. Br. to Alaska and Pac.; S. to Oregon and Mid. Calif.; E. to Atl. coast, N. Eng. and Del.; S. to mts. of N. Car.

Minn. valley: Forest district; local and rare; dry hills, thickets, woods and knolls.

HERB.: *Roberts 69*, Beaver bay; *Leiberg 41*, Blue Earth Co.; *Bailey 160*, Vermilion lake; *Sandberg 342*, Chisago Co.; *MacM.* and *Sheld. 39*, Brainerd.

GNAPHALIUM LINN. GEN. 645 (1737), emend. Benth. l. c. (1873).

Gamochaeta WEDD. Chlor. And. I, 151 (1855).

Euchiton CASS. Dict. LVI, 215 (1834).

Omalotheca CASS. l. c. 218 (1834).

Belloa REMY, Gay Fl. Chile III, 336 (1845).

Lucilia CASS. Bull. Philom. (1817).

Merope WEDD. Chlor. And. I, 160 (1855).

Baillon, *Hist. Pl.* VIII, 168; Benth. and Hook., *Gen. Pl.* II, 305; Durand, *Ind. Gen. Phan.* 200; Engler and Prantl, *Nat. Pflanz.* IV, 5, 187(Hoffmann).

Living species: 120; cosmopolitan. Europe, 6; Russia, 6; N. America, 15; Canada, 10–11; S. Sts., 2; E. Sts., 5; Rocky mts., 4; California, 6; Pl. Wheel., 3; Pl. King, 3; W. Tex., 7.

Gnaphalium uliginosum LINN. Fl. Dan. 859 (1757).

Wats. and Coult., Gray's Man. 6 ed. 268; Britt., Fl. N. J. 142; Mac., Fl. Can. I, 238; Upham, Fl. Minn. 86; Forbes and Hems., Fl. Sin. 428; Nym., Fl. Eur.: Led., Fl. Ross. II, 609; Hook., Fl. Gt. Brit. 208; Herd., Fl. Eur. Russ. 70; Wats., King Exp. 185; Engl. Hoffmann, Nat. Pflanz. IV, 5, 187; Gray, Syn. Fl. I, 2, 235; Hart., Fl. Scand. I, 12.

Northern Europe to Sicily and Sardinia; N. Asia to Amurland and China.

North America: Greenland and N. S. to Saskatchewan, Oregon and Brit. Col.; S. to N. Eng. and N. J., and adventive further south; S. to Minn. and Dak.

Minn. valley: N. E. and N. W. districts at higher levels; woods and sandy places; rare.

HERB.: *Sheldon 1610,* St. Anthony Park.

Gnaphalium decurrens IVES, Am. Jour. Sci. I, 380 (1820).

Wats. and Coult., Gray's Man. 6 ed. 268; Britt., Fl. N. J. 142; Coult., Fl. Colo. 178; Mac., Fl. Can. I, 237; Upham, Fl. Minn. 86; Cov., Fl. Ark. 193; Gray, Syn. Fl. I, 2, 235; Coult., Fl. Tex. 203.

North America: N. S., N. Br., Q., Ont. to Man., Brit. Col. and Washington; S. to N. Eng. and N. J.; W. to Colo., Tex. and Mex.

Minn. valley: Reported from S. central district; rare or doubtful; woods and hillsides in sandy soil.

Gnaphalium obtusifolium LINN. Spec. 851 (1753).

G. polycephalum MICHX. Fl. N. Am. II, 127 (1803).
G. conoideum LAM. Enc. Meth. II, 755 (1786).

Wats. and Coult., Gray's Man., 6 ed. 268; Britt., Fl. N. J. 142; Mac., Fl. Can. I, 238; Upham, Fl. Minn. 86; Chap., Fl. S. St. 243; Gray, Syn. Fl. I, 2, 234; Coult., Fl. Tex. 203.

North America: N. S., Q., Ont. to S. Man.; S. to Minn., Mo., and E. to Atl. and Fla.; Tex. and Mex.

Minn. valley: Forest district to Blue Earth Co.; open woods or thickets, sandy soil; infrequent.

HERB.: *Holtz 3,* Minneapolis; *Sandberg 341,* Goodhue Co.

ADENOCAULON HOOK. Bot. Misc. I, 19 (1849).

Baillon, *Hist. Pl.* VIII, 239; Benth. and Hook., *Gen. Pl.* II, 344; Durand, *Ind. Gen. Phan.* 206; Engler and Prantl, *Nat. Pflanz.* IV, 5, 206.

Living species: 2; 1, N. America, Japan and Himalayas; 1, Chile to Magellan.

Adenocaulon bicolor HOOK. Bot. Misc. I, 119 (1849).

Wats. and Coult., Gray's Man. 6 ed. 269; Upham, Fl. Minn. 70; Mac., Fl. Can. I, 239; Engl. Hoffmann, Nat. Pflanz. IV, 5, 206; Gray, Syn. Fl. I, 2, 237.

Himalayas to Japan.

North America: N. of L. Superior to lat. 52° N.; W. to Rockies, Cascade range, Brit. Col., Vancouver; S. to Calif. and C. Minn.

Minn. valley: Reported from N. edge; rare; moist or deep woodland.

HERB.: *Bailey 296,* St. Louis river.

POLYMNIA LINN. Diss. Chen. 1181 (1751).

Alymnia NECK. Elem. I, 31 (1790).
Polymniastrum LAM. Ill. 712 (1793).

Baillon, *Hist. Pl.* VIII, 234 (*sub Silphium*); Benth. and Hook., *Gen. Pl.* II, 346; Durand, *Ind. Gen. Phan.* 206; Engler and Prantl, *Nat. Pflanz.* IV, 5, 217 (Hoffmann).

Living species: 10–12; Buenos Ayres to Brit. Col. Canada, 1; E. Sts., 2; S. Sts., 2; W. Tex. 1.

Polymnia canadensis LINN. Amoen. III, 15 (1756).

P. canadensis var. *discoidea* GRAY, Man. 3 ed. 248 (1857).

Wats. and Coult., Gray's Man. 6 ed. 269; Upham, Fl. Minn. 78; Chap., Fl. S. St. 219; Mac., Fl. Can. I, 239; Cov., Fl. Ark. 193; Gray, Syn. Fl. I, 2, 238.

North America: Ont. and Conn. to mts. of N. Car.; W. to Minn., Kan., Mo. and Ark.

Minn. valley: S. E. district; rare; ravines, woods and damp edges of thickets.

HERB.: *Sandberg 309,* Red Wing; *Holzinger 120,* Winona Co.; *Sandberg 310,* Red Wing; *Holzinger 121,* Winona Co.; and in variety *radiata* Gray, *Sheldon 653,* Waseca.

SILPHIUM LINN. Gen. Corr. 981 (1737).

Baillon, *Hist. Pl.* VIII, 234 (incl. *Philoglossa* DC., *Berlandiera* DC., *Engelmannia* T. and G., *Schizoptera* Turcz., *Polymnia* Linn.); Benth. and Hook., *Gen. Pl.* II, 350; Durand, *Ind. Gen. Phan.* 207; Engler and Prantl, *Nat. Pflanz.* IV, 5, 218 (Hoffmann).

Living species: 12–13; N. America. E. Sts., 6–7; S. Sts., 8–9; Rocky mts., 1; Canada, 2; W. Tex., 6.

Silphium perfoliatum LINN. Spec. 2 ed. 1301 (1762).

S. connatum LINN. Mant. 574 (1767).
S. tetragonum and *scabrum* MOENCH, Meth. 606 (1794).
S. conjunctum WILLD. Enum. 633 (1809).
S. hornemanni SCHRAD. Hort. Gött. (1809).
S. erythrocaulon BERNH. Spreng. Syst. III, 630 (1826).

Wats. and Coult., Gray's Man. 6 ed. 271; Webb., Fl. Neb. 147; Upham, Fl. Minn. 78; Chap., Fl. S. St. 221; Mac., Fl. Can. I, 239, 549; Cov., Fl. Ark. 193; Engl. Hoffmann, Nat. Pflanz. IV, 5, 218; Gray, Syn. Fl. I, 2, 240.

North America: Detroit river to Minn. and Neb.; S. to Ark., mts. of Ga. and La.

Minn. valley: Throughout; gullies and ravines, edges of woods and thickets; wet places.

HERB.: *Sheldon 1298,* Lake Benton; *Taylor 723,* Minnesota lake; *Ballard 391,* Jordan, Scott Co.; *Ballard 772,* Swan lake, Carver Co.; *Taylor 702,* Minnesota lake; *Sheldon 901,* Sleepy Eye; *Sheldon 374,* Lake Ballentyne, Blue Earth Co.; *Sheldon 768,* Sleepy Eye; *Kassube 135,* Minneapolis; *Herrick 155,* Minneapolis; *Sandberg 312,* Goodhue Co.; *Herb. Moyer 131,* Minnesota valley, near Montevideo.

Silphium integrifolium MICHX. Fl. N. Am. II, 146 (1803).

S. laevigatum PURSH, Fl. Am. II (1814).
S. speciosum NUTT. Trans. Am. Phil. Soc. VII, 341 (1841).
S. integrifolium var. *laeve* T. and G. Fl. II, 279 (1841).

Wats. and Coult., Gray's Man. 6 ed. 271; Webb., Fl. Neb. 147; Upham, Fl. Minn. 78; Cov., Fl. Ark. 193; Gray, Syn. Fl. I, 2, 240; Coult., Fl. Tex. 205.

North America: Mich. to Minn. and Neb.; S. to Mo., Ark., Tex. and W. Ga.

Minn. valley: Reported from S. E. district; rare or local; prairies and hillsides or embankments.

Silphium terebinthinaceum JACQ. Hort. Vindob. I, 43 (1762).

Wats. and Coult., Gray's Man. 6 ed. 270; Mac., Fl. Can. I, 239; Cov., Fl. Ark. 193; Engl. Hoffmann, Nat. Pflanz. IV, 5, 218; Gray, Syn. Fl. I, 2, 242.

North America: Ohio, Mich., Wisc., Minn. and Dak. to Neb., Tex., Ark., Ga., La.

Minn. valley: S. central district; rare; prairies and banks.

Silphium laciniatum LINN. Spec. 919 (1753).

S. spicatum POIR. Suppl. V, 157 (1811).
S. gummiferum ELL. Sk. II, 426 (1824).

Wats. and Coult., Gray's Man. 6 ed. 270; Webb., Fl. Neb. 147; Upham, Fl. Minn. 78; Coult., Fl. Colo. 179; Chap., Fl. S. St. 220; Cov., Fl. Ark. 193; Engl. Hoffmann, Nat. Pflanz. IV, 5, 218; Gray, Syn. Fl. I, 2, 242; Coult., Fl. Tex. 205.

North America: Minn., Wisc. and Dak. to Neb., Colo., Ark. and Tex.; E. to Alabama.

Minn. valley: S. central and S. W. districts; E. to Waseca; banks, hillsides and prairies.

HERB.: *Sheldon 637*, Waseca; *Taylor 473*, Janesville; *Taylor 683*, Minnesota lake; *Sandberg 311*, Cannon Falls.

PARTHENIUM LINN. Gen. 675 (1737).

Villanova ORT. Dec. 47 (1800).
Argyrochaeta CAV. Ic. IV, 54 (1797).
Bolophyta NUTT. Trans. Phil. Soc. 2, VII, 347 (1841).
Partheniastrum NISSOL. Act. Par. (1711).
Hysterophorus VAILL. Act. Par. 335 (1720).
Trichospermum P. BEAUV. ex DC. Prodr. V (1836).
Aiolotheca DC. Prodr. V, 508 (1836).
Parthenice T. and G. Pl. Wright. II, 85 (1845).

Baillon, *Hist. Pl.* VIII, 233; Benth. and Hook., *Gen. Pl.* II, 351, 352; Durand, *Ind. Gen. Phan.* 207; Engler and Prantl, Nat. Pflanz. IV, 5, 219 (Hoffmann).

Living species: 11–12; N. America, Mexico, C. America and W. Indies; 1 also in S. America and introduced in Mauritius. U. S., 5; E. Sts., 1; S. Sts., 2; Pl. Wheel., 1; W. Tex., 5.

Parthenium integrifolium LINN. Spec. 988 (1753).

Wats. and Coult., Gray's Man. 6 ed. 272; Chap., Fl. S. St. 222; Upham, Fl. Minn. 78; Cov., Fl. Ark. 194; Gray, Syn. Fl. I, 2, 245; Coult., Fl. Tex. 208.

North America: Ind. to Alabama; W. to Minn., Ills. and Texas.

Minn. valley: Reported from the S. E. district; rare or local; dry places in edges of woods or thickets.

CYCLACHAENA FRESEN. Ind. Hort. Frank. (1836).

Baillon, *Hist. Pl.* VIII, 287 (*sub Iva*); Benth. and Hook. *Gen. Pl.* II, 353; Engler and Prantl, *Nat. Pflanz.* IV, 5, 221 (Hoffmann); Durand, *Ind. Gen. Phan.* 207.

Living species: 3, W. United States. (Possibly better combined as a separate section with *Iva* Linn.)

Cyclachaena xanthiifolia (NUTT.) FRESEN. Ind. Sem. Hort. Frank. (1836).

Iva xanthiifolia NUTT. Gen. II, 185 (1818).
Euphrosyne xanthiifolia GRAY, Pl. Wright. II, 85 (1852).

Wats. and Coult., Gray's Man. 6 ed. 273; Mac., Fl. Can. I, 240; Webb., Fl. Neb. 147; Upham, Fl. Minn. 78; Coult., Fl. Colo. 179; Engl. Hoffmann, Nat. Pflanz. IV, 5, 221; Gray, Syn. Fl. I, 2, 246.

North America: Saskatchewan to Idaho and Washington; S. to Minn., Neb. and N. Mex.

Minn. valley: Throughout; especially S. central and S. W. districts; roadsides, banks and waste places.

. HERB.. *Sandberg 131*, Goodhue Co.; *Herb. Moyer 132*, Montevideo.

AMBROSIA LINN. Gen. 718 (1737).

Franseria CAV. Ic. II, 78 (1793).
Hemiambrosia DELP. Stud. Art. 57 (1871).
Hemixanthidium DELP. l. c. 62 (1871).
Xanthidium DELP. l. c. 62 (1871).
Hymenoclea T. and G. Pl. Fendl. 79 (1849).

Baillon, *Hist. Pl.* VIII, 286; Benth. and Hook., *Gen. Pl.* II, 354; Durand, *Ind. Gen. Phan.* 207; Engler and Prantl, *Nat. Pflanz.* IV, 5, 221 (Hoffmann).

Living species: 35±; Mediterranean region, Africa, N. and C. America, Sandwich Isls. U. S., 24; Canada, 6; S. Sts., 4; California, 13; Rocky mts., 7; W. Tex., 5.

Ambrosia psilostachya DC. Prodr, V, 526 (1836).

A. peruviana DC. Prodr, V, 526 (1836).
A. coronopifolia T. and G. Fl. II, 291 (1841).

Wats. and Coult., Gray's Man. 6 ed. 273; Coult., Fl. Colo. 181; Webb., Fl. Neb. 147; Mac., Fl. Can. I, 240; Upham, Fl. Minn. 79; Brew. and Wats., Fl. Calif. I, 344; Griseb., Fl. W. I.; Wats., King Exp. 165; Roth., Wheel. Exp. 158; Cov., Fl. Ark. 194; Gray, Syn. Fl. I, 2, 250; Coult., Fl. Tex. 210.

North America: 49° N. in N. W. T. and Saskatchewan to Minn., Wisc., Ill., Neb., Tex. and Mex. to Calif., Nev. and Arizona.

Minn. valley: Throughout; habitat as in *A. artemisiaefolia* Linn.

HERB.: *Taylor 1146*, Starbuck, Pope Co.; *Sheldon 1522*, Lake Benton; *Oestlund 95*, Hennepin Co.; *Sandberg 316*, Red Wing.

Ambrosia artemisiaefolia LINN. Spec. 987 (1753).

A. elatior LINN. Spec. 988 (1753).
Iva monophylla WALT. Fl. Car. 233 (1788).
Ambrosia absinthifolia MICHX. Fl. N. Am. II, 183 (1803).
A. paniculata MICHX. Fl. N. Am. II, 183 (1803).
A. heterophylla MUHL. Willd. Spec. IV, 378 (1805).

Wats. and Coult., Gray's Man. 6 ed. 273; Britt., Fl. N. J. 143; Webb., Fl. Neb. 147; Upham, Fl. Minn. 79; Mac., Fl. Can. I, 240; Chap., Fl. S. St. 223; Coult., Fl. Colo. 180; Brew. and Wats., Fl. Calif. I, 344; Griseb., Fl. W. I.; Wats., King Exp. 165; Cov., Fl. Ark. 194; Engl. Hoffmann, Nat. Pflanz. IV, 5, 222; Gray, Syn. Fl. I, 2, 249; Coult., Fl. Tex. 210.

Introduced in W. Europe; Brazil and W. Indies.

North America: Across continent to Mex. and Hudson Bay, N. W. T. and Labrador.

Minn. valley: Throughout; hillsides, fields, roads, thickets and forest openings.

HERB.: *Taylor 753½*, Elysian; *Ballard 891*, St. Bonifacius; *Oestlund 94*, Minneapolis; *Oestlund 95*, Hennepin Co.; *Holzinger 122*, Winona Co.; *Sandberg 315*, Red Wing.

Ambrosia trifida LINN. Spec. 987 (1753).

Wats. and Coult., Gray's Man. 6 ed. 273; Britt., Fl. N. J. 145; Webb., Fl. Neb. 147, Mac., Fl. Can. I, 240; Chap., Fl. S. St. 223; Coult., Fl. Colo. 180; Upham, Fl. Minn. 79; Mac., Fl.Can. I, 549; Roth., Wheel. Exp. 158; Cov., Fl. Ark. 194; Gray, Syn. Fl. I, 2, 249; Coult., Fl. Tex. 209.

North America: Q., Ont. to Man. and Colo.; S. to Mo., Tex., Ark. and Fla.

Minn. valley: Throughout; gullies, ravines and thickets or along roads.

HERB.: *Ballard 845*, Page lake, Carver Co.; *Taylor 1029*, Glenwood; *Sandberg 314*, Goodhue Co.; *Herb. Moyer 133*, Montevideo.

Ambrosia trifida LINN. var. **integrifolia** (MUHL.) T. and G Fl. II, 354 (1841).

A. integrifolia MUHL. Willd. Spec. IV, 375 (1805).

Wats. and Coult., Gray's Man. 6 ed. 273; Britt., Fl. N. J. 143; Upham, Fl. Minn. 79; Mac., Fl. Can. I, 240; Chap., Fl. S. St. 223; Gray, Syn. Fl. I, 2, 249.

North America: With species; westward; Ills. to N. Y. and Va.

Minn. valley: Throughout at higher levels; local or infrequent; habitat with the species.

HERB.: *Sheldon 1332*, Lake Benton.

XANTHIUM LINN. Gen. 717 (1737).

Baillon, *Hist. Pl.* VIII, 287; Benth. and Hook., *Gen. Pl.* II, 355; Engler and Prantl, *Nat. Pflanz.* IV, 5, 222; Durand, *Ind. Gen. Phan.* 207.

Living species: 3–4; temperate and warmer regions, around the world. Russia. 3; Europe, 3; Russian Europe, 2; N. America, 3–4; Canada, 1–2; California, 1; Rocky mts., 1; E. Sts., 1–2; W. Tex., 2–3.

Xanthium canadense MILL. Dict. ed. 8 (1768).

X. orientale LINN. Spec. (1753) *in part.*
X. carolinense DILL. Elth. II, 432 (1774).
X. americanum WALT. Fl. Car. 231 (1788).
X. macrocarpum var. *glabratum* DC. Prodr. V, 523 (1836).
X. strumarium var. *canadense* T. and G. Fl. II, 294 (1841).
X. strumarium AUCT. AMER.

Wats. and Coult., Gray's Man. 6 ed. 274; Coult., Fl. Colo., 182; Webb., Fl. Neb. 147; Mac., Fl. Can. I, 241; Upham, Fl. Minn. 79; Chap., Fl. S. St. 224; Roth., Wheel. Exp. 159; Wats., King Exp. 166; Engl. Hoffmann, Nat. Pflanz. IV, 5, 223; Gray, Syn. Fl. I, 2, 252; Coult Fl. Tex. 211.

North America: N. W. T. to Tex.; W. to Calif. and Nev.; E. to Saskatchewan, Minn., Neb., Ark.? Ga.

Minn. valley: Throughout, especially N. E.; sterile places, banks and fields.

HERB.: ?*Ballard 14n*, Chaska; *Sandberg 317*, Cannon Falls.

Xanthium canadense MILL. var. **echinatum** (MURR.) GRAY, Syn. Fl. I, 2, 252 (1886).

X. echinatum MURR. Comm. Gött. VI, 32 (1792).
X. maculatum RAF. Am. Journ. Sci. I, 151 (1820).

Wats. and Coult., Gray's Man. 6 ed. 274; Britt., Fl. N. J. 143; Chap., Fl. S. St. 224; Mac.,Fl. Can. I, 241; Upham, Fl. Minn. 79; Coult., Fl. Tex. 211.

South America: Chile.

North America: N. S., Q., Ont., Man. to Minn.; S. to N. J., Penn. and N. Car.

Minn. valley: S. E. and W. edges of valley; roadsides, fields and banks.

HERB: *Sheldon 1588*, Lake Benton; *Holzinger 123*, Winona Co.; *Holzinger 124*, Winona Co.

HELIOPSIS PERS. Syn. II, 473 (1807).

Kallias CASS. Dict. XXIV, 326 (1834).
Andrieuxia DC. Prodr. V, 559 (1836).

Baillon, *Hist. Pl.* VIII, 220; Benth. and Hook., *Gen. Pl.* II, 358; Durand, *Ind. Gen. Phan.* 208; Engler and Prantl, *Nat. Pflanz.* IV, 5, 226.

Living species: 7; N. and C. America, 6; C. America and Peru, 1; Canada, 2; R. mts., 1; E. Sts., 2; S. Sts., 1; Pl. Wheel., 1.

Heliopsis scabra DUNAL. Mem. Mus. V, 55 (1818?).

H. laevis var. *scabra* T. and G. Fl. II, 303 (1841).

Wats. and Coult., Gray's Man. 6 ed. 275; Mac., Fl. Can. I, 242; Webb., Fl. Neb. 147; Upham, Fl. Minn. 79; Britt., Fl. N. J. 143; Mac., Fl. Can. I, 549; Cov., Fl. Ark. 194; Gray, Syn. Fl. I, 2, 255.

North America: N. Br.? to Red, Saskatchewan, Assiniboine valleys; N. to 49° N. lat.; S. to N. Y., N. J. and W. to Minn., Neb., Mo., Ark. and Tex.

Minn. valley: Throughout; banks and thickets or hillsides in woods.

HERB.: *Ballard 736*, Waconia; *Sheldon 1590*, Lake Benton; *Taylor 476*, Mud lake, Waseca Co.; *Taylor 589*, Minnesota lake; *Sheldon 1175*, New Ulm; *Ballard 197*, Jordan, Scott Co.; *Taylor 314*, Janesville; *Ballard 632*, Chaska; *Ballard 320*, Belle Plaine; *Taylor 779*, Glenwood; *Oestlund 96*, Minneapolis; *Holzinger 124*, Winona; *Sandberg 318*, Goodhue Co.; *Herb. Sheld, 1920*, Minneapolis; *Herb. Moyer 134*, Montevideo.

RUDBECKIA LINN. Gen. 669 (1737).

Echinacea MOENCH, Meth. 591 (1794).
Brauneria NECK. Elem. I. 17 (1790).

Helichroa RAF. Neogen. 35 (1825).
Obeliscaria CASS. Dict. XXXV, 272 (1825).
Lepachys RAF. Jour. Phys. LXXXIX, 100 (1819).
Ratibida RAF. l. c. (1819).
Dracopsis CASS. Dict. l. c. (1825).
Centrocarpha DON, Sweet. Brit. Fl. Gard. 2, 87 (1832).
? **Heliophthalmum** RAF. Fl. Lud. 72 (1817).
? **Bobartia** PETIV. herb.

Baillon, *Hist. Pl.* VIII, 218; Engler and Prantl, *Nat. Pflanz.* IV, 5, 233; Durand, *Ind. Gen. Phan.* 209; Benth. and Hook., *Gen. Pl.* II, 365.

Living species: 30±; N. America to Mexico; S. Sts., 15; E. Sts., 11; Rocky mts., 6; Canada, 4; Calif., 1-2; Pl. Wheel., 4-5; W. Tex., 8.

Rudbeckia columnaris PURSH, Fl. Am. 575 (1814).
Ratibida sulcata RAF. Journ. Phys. LXXXIX 100 (1819).
Obeliscaria columnaris DC. Prodr. V, 558 (1836).
Lepachys columnaris T. and G. Fl. II, 313 (1841).

Wats. and Coult., Gray's Man. 6 ed. 277; Mac., Fl. Can. I, 243; Webb., Fl. Neb. 146; Coult., Fl. Colo. 183; Upham, Fl. Minn. 80; Roth., Wheel. Exp. 160 *in var.;* Engl. Hoffmann, *Nat. Pflanz.* IV, 5, 233; Gray, Syn. Fl. I, 2, 264.

North America: N. W. T. and Saskatchewan to Colo., Minn., Neb., Arizona and Tex.

Minn. valley: W. district at higher levels; prairies and sunny banks.

HERB.: *Sheldon 1438,* Dakota line, near Elkton; *Sheldon 1585,* Lake Benton; *Taylor 863,* Glenwood; *Gedge 7,* Glyndon, Clay Co.; *Herb. Moyer 137,* Montevideo.

Rudbeckia pinnata VENT. Hort. Cels. 71 (1800).
Rudbeckia digitata WILLD. Spec. III, 2247 (1803).
Lepachys pinnatifida RAF. Journ. Phys LXXXIX (1819).
L. angustifolia RAF. Journ. Phys. LXXXIX (1819).
Rudbeckia tomentosa ELL. Sk. II, 453 (1824)
Obeliscaria pinnata CASS. Dict. XLVI, 401 (1825).
Lepachys pinnata T. and G. Fl. II, 313 (1841).

Wats. and Coult., Gray's Man. 6 ed. 277; Chap., Fl. S. St. 228; Upham, Fl. Minn. 80; Webb., Fl. Neb. 146; Cov., Fl. Ark. 195; Gray, Syn. Fl. I, 2, 263.

North America: Minn., Neb., Kan. and Tex. to N. Y. and Fla.

Minn. valley: Throughout; banks, hillsides, edges of thickets and along roads.

HERB.: *Sheldon 641,* Waseca; *Taylor 649,* Minnesota lake; *Sheldon 1055,* Sleepy Eye; *Taylor 561,* Minnesota lake; *Ballard 774,* Swan lake, Carver; Co.; *Sheldon 1463,* Pipestone; *Ballard 539,* Cleary's lake, Scott Co,; *Herrick 158,* Minneapolis; *Oestlund 97,* Minneapolis; *Sandberg 323,* Goodhue Co.

Rudbeckia hirta LINN. Spec. 907 (1753).

?*R. gracilis* NUTT. Gen. II, 178 (1818).
?*R. discolor* ELL. Sk. II, 453 (1824).
R. serotina NUTT. Journ. Acad. Phil. VII, 80 (1834).
R. strigosa NUTT. Trans. Am. Phil. Soc. VII, 354 (1841).

Wats. and Coult., Gray's Man. 6 ed. 276; Britt., Fl. N. J. 144; Webb., Fl. Neb. 146; Upham, Fl. Minn. 80; Mac.,Fl. Can. I, 242; Chap., Fl. S. St. 227; Coult.,Fl. Colo. 183; Roth., Wheel. Exp. 160; Cov., Fl. Ark. 195; Gray, Syn. Fl. I, 2, 260; Coult., Fl. Tex. 215.

North America: Ont. to Saskatchewan and Colo.; S. to N. Y. and Fla.; W. to Minn., Dak., Neb., Ark. and Tex.

Minn. valley: Throughout; dry places on hills or in fields.

HERB.: *Sheldon 1275,* Lake Benton; *Taylor 790,* Glenwood; *Sandberg 221,* Cannon Falls; *Leonard 25,* Minneapolis; *Bailey 303,* Vermilion lake; *Huntington 8,* Rock Co.; *Kassube 136,* Minneapolis; *Herrick 157,* Minneapolis; *Ankeny 2,* Stillwater; *Sandberg 322,* Goodhue Co.; *Herb. Sheld. 1923,* Minneapolis.

Rudbeckia subtomentosa PURSH, Fl. Am. 575 (1814).

R. triloba var. *a.* MICHX. Fl. N. Am. II, 144 (1803).
R. tomentosa ELL. Sk. II, 453 (1824).
Centrocarpha triloba DON, Sweet. Brit. Fl. Gard. 61 (1826).
Rudbeckia odorata NUTT. Journ. Acad. Phil. VII, 78 (1834).

Wats. and Coult., Gray's Man. 6 ed. 276; Upham, Fl. Minn. 80; Cov., Fl. Ark. 195; Gray, Syn. Fl. I, 2, 260; Coult., Fl. Tex. 215.

North America: Wisc. and Minn. to Ill., Mo., Ark. and Tex.

Minn. valley: Reported from N. E. district; infrequent; prairies or hillsides.

Rudbeckia laciniata LINN. Spec. 906 (1753).

R. quinata and *digitata* MILL. Dict. ed. 8 (1768).

Wats. and Coult., Gray's Man. 6 ed. 276; Britt., Fl. N. J. 141; Webb., Fl. Neb. 146; Upham, Fl. Minn. 80; Mac., Fl. Can. I, 242; Coult., Fl. Colo. 183; Chap., Fl. S. St. 227; Mac., Fl. Can. I, 549; Roth., Wheel. Exp. 160; Cov., Fl. Ark. 195; Engl. Hoffmann, Nat. Pflanz. IV, 5, 233; Gray, Syn. Fl. I, 2, 262.

North America: Q., Ont. to Assiniboia and Mont.; S. to N. J. and Fla.; W. to Colo., Arizona and N. Mex.

Minn. valley: Throughout; thickets and edges of woods.

HERB.; *Taylor 802,* Glenwood; *Taylor 977,* Glenwood; *Ballard 749,* Waconia; *Sheldon 1267,* Lake Benton; *Sheldon 18,* Elysian; *Herrick 156,* Minneapolis; *Sandberg 320,* Goodhue Co.; *Herb. Moyer 136,* Montevideo.

Rudbeckia angustifolia (DC.) B. and H. Gen. Pl. II, 365 (1873).

Echinacea angustifolia DC. Prodr. V, 554 (1836).

E. pallida and *sanguinea* NUTT. Trans. Am. Phil. Soc. VII, 354 (1841).

Wats. and Coult., Gray's Man. 6 ed. 275; Webb., Fl. Neb. 147; Coult., Fl. Colo. 182; Upham, Fl. Minn. 80; Chap., Fl. S. St. 226; Mac., Fl. Can. I, 243, 549; Cov., Fl. Ark. 194; Gray, Syn. Fl. I, 2, 258.

North America: Man to 49° N. lat.; S. to Minn., Wisc., Ill., Neb., Colo., Ark., Alab. and Tex.

Minn. valley: W. districts; New Ulm to Stearns Co.; prairies and hillsides.

HERB.: *Taylor 748,* Glenwood; *Sheldon 737,* Sigel township, Brown Co.; *Sheldon 1176,* New Ulm; *Sheldon 1330,* Lake Benton; *Taylor 748a,* Glenwood; *Sheldon 1138,* Springfield; *Sandberg 319,* Red Wing; *Huntington 7,* Rock Co.; *Herb. Moyer 135,* Montevideo.

HELIANTHUS LINN. Gen. 668 (1737).

Harpalium CASS. Bull. Philom. (1818).
Echinomeria NUTT. Trans. Phil. Soc. 2, VII, 356 (1841).
Flourensia DC. Prodr. V, 585 (1836).
Diomedea BERT. and COLL. Mem. Tur. XXXVIII, 35 (1835).
Linsecomia BUCKL. Proc. Phil. Acad. 451 (1861).
Corona-solis TOURN. Inst. 489 (1700).
Chrysis REN. ex Endl. Gen. 2538 (1840).
Vosacan ADANS. Fam. II, 130 (1763).
Discomela RAF. Neogen. 3 (1825) *part.*

Baillon, *Hist. Pl.* VIII, 201; Benth. and Hook., *Gen. Pl.* II, 376; Durand, *Ind. Gen. Phan.* 210; Engler and Prantl, *Nat. Pflanz.* IV, 5, 235 (Hoffmann).

Living species: 55–60; principally N. America; some, C. America; a few in Peru. Canada, 13; Rocky mts., 9–10; E. Sts., 22–23; California, 5–6; S. Sts., 25; Pl. Wheel., 5; Pl. King, 5; W. Tex., 15.

Helianthus tuberosus LINN. Spec. 905 (1753).

H. doronocoides T. and G. Fl. II, 327 (1841) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 280; Chap., Fl. S. St. 230; Upham, Fl. Minn. 82; Coult., Fl. Colo. 187; Mac., Fl. Can. I, 245, 540; Webb., Fl. Neb. 146; Britt., Fl. N. J. 145; Herd., Fl. Eur. Russ. 66; Engl. Hoffmann, Nat. Pflanz. IV, 5, 236; Gray, Syn. Fl. I, 2, 280; Hart., Fl. Scand. I, 553.

Introduced in Russia and Scandinavia.

North America: N. S., N. Br., Q., Ont. to N. J. and Penn. and Mid. Ga.; W. to Minn. and Neb.

Minn. valley: Throughout; alluvial soil along streams or around lakes.

HERB.: *Sheldon 1413*, Lake Benton; *Huntington 9*, Rock Co.

Helianthus tuberosus var. **subcanescens** GRAY, Syn. Fl. I, 2, 280 (1886).

Wats. and Coult., Gray's Man. 6 ed. 280; Coult., Fl. Colo. 187; Upham, Fl. Minn. 82.

North America: Minn., Dak. and Mo.

Minn. valley: Reported from prairies of S. W. district.

Helianthus decapetalus LINN. Spec. 905 (1753).

H. frondosus LINN. Amoen. IV, 290 (1759).
H. strumosus WILLD. Spec. III, 2422 (1804).
H. tenuifolius ELL. Sk. II, 420 (1824).

Wats. and Coult., Gray's Man. 6 ed. 280; Britt., Fl. N. J. 145; Upham, Fl. Minn. 82; Mac., Fl. Can. I, 245,550; Chap., Fl. S. St. 231; Gray, Syn. Fl. I, 2, 280; Webb., Appx. Neb. 44.

North America: N. Br., Q., Ont. to Georgian bay and Minn.; S. to Ga. in mts.; W. to Ill., Neb. and Ky.

Minn. valley: Throughout; local or rare; thickets, banks of streams or copses.

HERB.: ? *Herrick 161*, Minneapolis; *Taylor 928*, Glenwood; *Herb. Moyer 141*, Montevideo.

Helianthus tracheliifolius WILLD. Spec. III, 2241 (1804).

H. prostratus WILLD. Spec. III, 2242 (1804).

Wats. and Coult., Gray's Man. 6 ed. 280; Upham, Fl. Minn. 82; Cov., Fl. Ark. 195; Gray, Syn. Fl. I, 2, 280.

North America: Penn.?, Ohio to Minn., Mo. and Ark.

Minn. valley: Reported from N. E. district; infrequent or doubtful; thickets and edges of woods.

Helianthus strumosus LINN. Spec. 905 (1753).

H. laevis WALT. Fl. Car. 215 (1788).

Wats. and Coult., Gray's Man. 6 ed. 280; Britt., Fl. N. J. 145; Mac., Fl. Can. I, 244; Upham, Fl. Minn. 82; Chap., Fl. S. St. 231; Cov., Fl. Ark. 195; Engl. Hoffman, Nat. Pflanz. IV, 5, 236; Gray, Syn. Fl. I, 2, 279.

North America: Ont. to N. W. T.; S. to Minn., Mo. and Ark.; E. to N. Eng., N. J., Va. and Ga.

Minn. valley: Throughout; rare or local; banks, thickets and ravines.

HERB.: ? *Kassube 138*, Minneapolis.

Helianthus hirsutus RAF. Ann. Nat. 141 (1820).

? *H. diversifolius* ELL. Sk. II, 416 (1824).
? *H. hispidulus* ELL. Sk. II, 416 (1824).

Wats. and Coult., Gray's Man. 6 ed. 280; Webb., Fl. Neb. 146; Upham, Fl. Minn. 82; Chap., Fl. S. St. 231; Cov., Fl. Ark. 195; Gray, Syn. Fl. I, 2, 279.

North America: Ohio to Wisc. and Minn.; S. to Va., Tenn., Ga. and Tex.

Minn. valley: W. districts; prairies and sunny banks.

HERB.: *Wickersheim 79*, Idlewild, Lincoln Co.

Helianthus divaricatus LINN. Spec. 906 (1753).

H. truncatus SCHWEIN. Ell. Sk. II, 416 (1824).

Wats. and Coult., Gray's Man. 6 ed. 280; Britt., Fl. N. J. 145; Webb., Fl. Neb. 146; Upham, Fl. Minn. 82; Mac., Fl. Can. I, 245; Chap., Fl. S. St. 231; Gray, Syn. Fl. I, 2, 279.

North America: Ont. to S. Man.; S. to N. Eng., N. J., Fla.; W. to Minn., Dak., Neb., Kan. and La.

Minn valley: Throughout; local or infrequent; thickets and copses.

HERB.: *Ballard 711*, Waconia; *Taylor 927*, Glenwood; *Sheldon 472*, Madison Lake; *Holzinger 127*, Winona bluffs; *Herrick 160*, Minneapolis.

Helianthus maxmiliani SCHRAD. Ind. Sem. Gött. (1835).

H. maxmiliani var. *asperrimus* GRAY, Pl. Lindh. I, 41 (1845).

Wats. and Coult., Gray's Man. 6 ed. 279; Webb., Fl. Neb. 146; Upham, Fl. Minn. 81; Mac., Fl. Can. I, 245, 550; Coult., Fl. Còlo. 187; Gray, Syn. Fl. I, 2, 277; Coult., Fl. Tex. 219.

North America: Saskatchewan and Man. to Minn., Neb. and Tex.

Minn. valley: S. and S. W. districts; also N. E.; local; low places and edges of swamps.

HERB.: *Sheldon 1454*, Pipestone; *Sheldon 1281*, Lake Benton; *Sandberg 327*, Red Wing; *Oestlund 99*, Minneapolis; *Oestlund 100*, Minneapolis; *Herb. Moyer, 139*, Montevideo.

Helianthus giganteus LINN. Spec. 905 (1753).

H. altissimus LINN. Spec. 2 ed. 1278 (1762).

H. gigas MICHX. Fl. N. Am. II, 141 (1803).

H. tuberosus PARRY, Ow. Rep. Minn. Surv. 614 (1849).

Wats. and Coult., Gray's Man. 6 ed. 279; Britt., Fl. N. J. 145; Webb., Fl. Neb. 146; Mac., Fl. Can. I, 244; Upham, Fl. Minn. 81; Chap., Fl. S. St. 230; Wats., King Exp. 169; Roth., Wheel. Exp. 162 *in var.*; Engl. Hoffmann, Nat. Pflanz. IV, 5, 236; Gray, Syn. Fl. I, 2, 276; Coult., Fl. Tex. 219.

North America: Ont. to Man. and Rockies; S. to Minn., Neb. and Mo.; E. to N. Eng., N. J., Va., Alab. and La.

Minn. valley: N. E. district; rare; woods and thickets or shaded banks.

HERB.: *Bailey 456*, Mud lake; *Roberts 64*, Beaver bay; *Sandberg 328*, Red Wing.

Helianthus grosse-serratus MART. Sel. Sem. Hort. Lovan. (——).

Wats. and Coult., Gray's Man. 6 ed. 279; Webb., Fl. Neb. 146; Upham, Fl. Minn. 81; Coult., Fl. Colo. 187; Cov., Fl. Ark. 195; Gray, Syn. Fl. I, 2. 276; Coult., Fl. Tex. 219.

North America: Ohio to Minn., Dak. and Colo.; S. to Texas.

Minn. valley: W. and central districts; moist prairies and open banks of streams.

HERB.: *Sheldon 1282,* Lake Benton; *Holzinger 126,* Winona Co.; *Sandberg 329,* Red Wing; *Herb. Moyer 140,* Montevideo.

Helianthus laetiflorus PERS. Syn. II, 476 (1807).

H. atrorubens LAM. Enc. Meth. III, 86 (1789).

Wats. and Coult., Gray's Man. 6 ed. 278; Webb. Fl. Neb. 146; Chap., Fl. S. St. 230; Cov., Fl. Ark. 195?; Gray, Syn. Fl. I, 2, 275.

North America: Ohio to W. Ga.; W. to Minn., Dak., Neb., Ark. ? and Tex.

Minn. valley: S. central district; dry open places and edges of woods.

HERB.: ? *Sandberg 326,* Red Wing.

Helianthus rigidus (CASS.) DESF. Hort. Par. 3 ed. 184 (1829).

H. atrorubens MICHX. Fl. N. Am. II, 140 (1803) *in part.*

H. diffusus SIMS, Bot. Mag. 2020 (——).

Harpalium rigidum CASS. Dict. XX, 200 (1826).

Helianthus missuricus SPRENG. Syst. III, 618 (1826).

H. scaberrimus ELL. Sk. II, 423 (1824).

H. missouriensis and *crassifolius* NUTT. Trans. Am. Phil. Soc. VII, 366 (1841).

Wats. and Coult., Gray's Man. 6 ed. 278; Webb., Fl. Neb. 146; Upham, Fl. Minn. 81; Mac., Fl. Can. I, 244; Coult., Fl. Colo. 186; Gray, Syn. Fl. I, 2, 274; Coult., Fl. Tex. 218.

North America: Saskatchewan to Rockies; E. to Minn and Mich.; S. to Dak., E. Colo. and Tex.

Minn. valley: Throughout; fields, banks of streams and roadsides or embankments.

HERB.: *Sheldon 1336,* Lake Benton; *Taylor 1021,* Glenwood; *Taylor 944,* Glenwood; *Taylor 1021,* Glenwood; *Sheldon 1283,* Verdi, Lincoln Co.; *Sheldon 1394,* Lake Benton—flowers all ligulate; *Kassube 137,* Minneapolis; *Oestlund 98,* Minneapolis; *Oestlund 99,* Minneapolis; *Holzinger 125,* Winona bluffs; *Sandberg 325,* Goodhue Co.; *Herb. Moyer 138,* Montevideo; *Sheldon 1601½,* Minneapolis.

Helianthus petiolaris NUTT. Jour. Acad. Phil. II, 115 (1821).

H. patens LEHM. Ind. Sem. Hamb. (1828).

H. integrifolius NUTT. Trans. Am. Phil. Soc. VII, 636 (1841).

Wats. and Coult., Gray's Man. 6 ed. 278; Gray, Syn. Fl. I, 2, 272; Upham, Fl. Minn. 80; Coult., Fl. Colo. 186; Mac., Fl. Can. I, 244; Brew. and Wats., Fl. Calif. I, 353; Webb., Fl. Neb. 146; Coult., Fl. Tex. 217.

North America: Saskatchewan to Minn., Neb. and Tex.; W. to Oregon and Arizona.

Minn. valley: S. central district and S. W. on prairies or sterile hillsides.

HERB.: *Sheldon 1191*, New Ulm.

Helianthus annuus LINN. Spec. 904 (1753).

H. tubaeformis NUTT. Gen. II, 177 (1818).
H. ovatus LEHM. Ind. Sem. Hamb. (1828).
H. lenticularis DOUGL. Bot. Reg. XV, t. 1225 (1825).
H. multiflorus HOOK. Fl. Bor.-Am. I, 313 (1833).
H. macrocarpus DC. Prodr. V, 586 (1836).

Wats. and Coult., Gray's Man. 6 ed. 278; Upham, Fl. Minn. 80; Mac., Fl. Can. I, 243; Webb., Fl. Neb. 146; Britt., Fl. N. J. 144; Chap., Fl. S. St. 232; Coult., Fl. Colo. 186; Brew. and Wats., Fl. Calif. I, 353; Herd., Fl. Eur. Russ. 66; Roth., Wheel. Exp. 162; Wats., King Exp. 169; Cov., Fl. Ark. 195; Engl. Hoffmann, Nat. Pflanz. IV, 5, 236; Gray, Syn. Fl. I, 2, 272; Coult., Fl. Tex. 217.

Introduced in Russia.

North America: Saskatchewan to Washington; S. to Nev., Calif., Colo., Tex. and Mex.; E. to Minn., Iowa, Ark., and intro. further E. to Atl. coast.

Minn. valley: S. E. district and doubtless N. W.; waste ground.

HERB.: *Sandberg 324*, Red Wing.

COREOPSIS LINN. Gen. 670 (1737).

Chrysostemma LESS. Syn. Comp. 227 (1832).
Diodonta and **Heterodonta** NUTT. Trans. Phil. Soc. 2, VII, 360 (1841).
Acispermum NECK. Elem. I, 34 (1790).
Electra DC. Prodr. V, 630 (1836).
Tuckermannia NUTT. l. c. 363 (1841).
Leachia CASS. Dict. XXV, 388 (1825).
Chrysomelea TAUSCH. Hort. Canal. (1823).
Coreopsides MOENCH, Meth. 594 (1794).
Anacis SCHRANK, Denkschr. Acad. Mun. V, 5 (——).
Calliopsis REICH. Ic. and Descr. 70 (1822).
Diplosastera TAUSCH. Hort. Can. ex Flora (1824).
Prestinaria SCH. BIP. Walp. Rep. VI, 162 (1847).
Epilepis BENTH. Pl. Hartw. 17 (1839).
Campylotheca and **Dolicotheca** CASS. Dict. LI, 476 (1826)
? **Peramibus** RAF. Ann. Nat. I, 14 (1820).
Leptosyne DC. Prodr. V, 531 (1836).
Agarista DC. l. c. 569 (1836).
Pugiopappus TORR. Whipple Exp. 48 (1856).
Epilepis BENTH. Pl. Hartw. (1839).

Baillon, *Hist. Pl.* VIII, 221 (*sub Bidens*); Benth. and Hook, *Gen. Pl.* II, 385; Durand, *Ind. Gen, Phan.* 212; Engler and Prantl, *Nat. Pflanz.* IV, 5, 242 (Hoffmann).

Living species: 70–75; N. and S. America, tropical Africa and Sandwich Islands; N. America, 30±; Canada, 7; Rocky mts., 2; E. Sts., 18; S. Sts., 20; Pl. Wheel., 2; W. Tex., 9.

Coreopsis aristosa MICHX. Fl. N. Am. II, 140 (1803).
C. aristata WILLD. Spec. III, 2253 (1804).
Diodonta aristosa NUTT. Trans. Am. Phil. Soc. VII, 360 (1841).

Wats. and Coult., Gray's Man. 6 ed. 283; Upham, Fl. Minn. 83; Cov., Fl. Ark. 196; Gray, Syn. Fl. I, 2, 295.

North America: Ohio to Minn., Mo., Ark. and W. La.

Minn. valley: S. central district; rare; peat bogs.

Coreopsis trichosperma MICHX. Fl. N. Am. II, 139 (1803).
C. aurea LINDL. Bot. Reg. XV, t. 1228 (1829).
Diodonta coronata NUTT. Trans. Am. Phil. Soc. VII, 360 (1841).

Wats. and Coult., Gray's Man. 6 ed. 283; Chap., Fl. S. St. 234; Mac., Fl. Can. I, 246 and 550 *in var*; Upham, Fl. Minn. 83; Britt., Fl. N. J. 146; Gray, Syn. Fl. I, 2, 295.

North America: Detroit river to Mass.; S. to N. Car.; W. to Ill. and Minn.?

Minn. valley?: Reported from N. E. district; doubtful.

Coreopsis palmata NUTT. Gen. II, 573 (1818).
Calliopsis palmata SPRENG. Syst. III, 611 (1826).
Coreopsis pauciflora LEHM. Ind. Sem. Hamb. (1833).
C. praecox FRESEN. Ind. Sem. Frankf. (1838).

Wats. and Coult., Gray's Man. 6 ed. 282; Upham, Fl. Minn. 82; Webb., Fl. Neb. 146; Mac., Fl. Can. I, 551; Cov., Fl. Ark. 196; Gray, Syn. Fl. I, 2, 293; Coult., Fl. Tex. 223.

North America: Man.? Mich. and Minn. to Neb., Ark. and W. Tex.

Minn. valley: Throughout; hillsides, copses, edges of woods and thickets, or prairies.

HERB.: *Taylor 170,* Janesville; *Taylor 556,* Minnesota lake; *MacMillan 16,* Glenwood; *Sheldon 643,* Waseca; *Sheldon 1030,* Sleepy Eye—form with upper leaves entire; *Sheldon 900,* Cottonwood river, near Sleepy Eye; *Ballard 384,* Jordan, Scott Co.; *Sheldon 1132,* Springfield; *Ankeny 3,* Stillwater; *Kassube 139,* Minneapolis; *Herrick 162,* Minneapolis; *Arthur 1000,* Elk river; *Sandberg 330,* Red Wing; *Herrick 163,* Minneapolis; *Oestlund 101,* Minneapolis; *Herb. Moyer 142,* Chippewa Co.

Coreopsis tinctoria NUTT. Journ. Acad. Phil. II, 114 (1821).
Calliopsis bicolor REICH. Mag. t. 70 (1824).

Wats. and Coult., Gray's Man. 6 ed. 282; Mac., Fl. Can. I, 246; Upham, Fl. Minn. 82; Webb., Fl. Neb. 146; Coult., Fl. Colo. 189; Roth. Wheel.

Exp. 164; Cov., Fl. Ark. 196; Engl. Hoffmann, Nat. Pflanz. IV, 5, 243; Gray, Syn. Fl. I, 2, 291; Coult., Fl. Tex. 222.

North America: Saskatchewan and lat. 49° N. to Ark. and Tex.; W. to Colo. and Arizona; E. to La.

Minn. valley: Reported from moist prairies of S. W. and W. districts.

BIDENS Linn. Gen. 641 (1737).

Pluridens and **Edwardsia** Neck. Elem. I, 86, 87 (1790).
Kerneria Moench, Meth. 595 (1794).
Ceratocephalus Vaill. ex DC. Prodr. V, 594 (1836).
Delucia DC. Prodr. V, 633 (1836).
Adenolepis Less. Linn. VI, 510 (1832).

Baillon, *Hist. Pl.* VIII, 221; Benth. and Hook., *Gen. Pl.* II, 387; Durand, *Ind. Gen. Phan.* 212; Engler and Prantl, *Nat. Pflanz.* IV, 5, 244 (Hoffmann).

Living species: 60–90; all temperate and warmer regions, especially in America; Russia, 3; Europe, 4; Russian Europe, 3; North America, 15; E. Sts., 6; Canada, 6; Rocky mts., 5; S. Sts., 5; California, 2; Pl. Wheel., 3; W. Tex., 5.

Bidens beckii Torr. Spreng. Neu. Entd. II, 135 (1824).

Wats. and Coult., Gray's Man. 6 ed. 285; Britt., Fl. N. J. 147; Upham, Fl. Minn. 83; Mac., Fl. Can. I, 247; Engl. Hoffmann, Nat. Pflanz. IV, 5, 245; Gray, Syn. Fl. I, 2, 298.

North America: St. Lawrence, Q., Ont. to Man., Red valley and Porcupine mts.; S. to E. Mass. and N. J., and to Minn. and Mo.

Minn. valley: N. E. district; aquatic, in ponds, lakes and sluggish streams

Herb.: *Holtz 2*, Minneapolis; *Herrick 166*, Minneapolis; *Herrick 167*, Minneapolis; *Bailey 541*, Long lake.

Bidens laevis (Linn.) B. S. P. Cat. N. Y. (1888).

Helianthus laevis Linn. Spec. 906 (1753).
Coreopsis bidens and *perpoliata?* Walt. Fl. Car. 215 (1788).
Bidens chrysanthemoides Michx. Fl. N. Am. II, 136 (1803).
B. helianthoides HBK. Nov. Gen. et. Spec. IV, 230 (1820).
B. quadriaristata DC. Prodr. V, 593 (1836).

Wats. and Coult., Gray's Man. 6 ed. 285; Britt., Fl. N. J. 147; Webb., Fl. Neb. 146; Upham, Fl. Minn. 83; Chap., Fl. S. St. 237; Coult., Fl. Colo. 190; Brew. and Wats., Fl. Calif. I, 357; Mac., Fl. Can. I, 247; Cov., Fl. Ark. 196; Gray, Syn. Fl. I, 2, 296; Coult., Fl. Tex. 223.

North America: N. S., N. Br., Q., Ont. to Man. and Calif.; S. to Fla. and Mex.

Minn. valley: Throughout; swamps and shaded wet banks of streams or by springs.

HERB.: *Sheldon 1470*, Pipestone; *Winchell 10*, Richfield; *Herrick 165*, Minneapolis; *Holzinger 128*, Winona; *Sandberg 333*, Cannon Falls; *Herb. Moyer 144*, Montevideo.

Bidens cernua LINN. Spec. 832 (1753).

Coreopsis bidens LINN. Spec. 908 (1753).

Bidens cernua var. *elata* T. and G. Fl. II, 352 (1841)

B. quadriaristata var. *dentata* NUTT. Trans. Am. Phil. Soc. VII, 368 (1841).

Wats. and Coult., Gray's Man. 6 ed. 285; Britt., Fl. N. J. 147; Mac., Fl. Can. I, 247; Upham, Fl. Minn. 83; Webb., Fl. Neb. 145; Coult., Fl. Colo. 189; Brew. and Wats., Fl. Calif. I, 357; Forbes and Hems., Fl. Syn. 435; Hook., Fl. Gt. Brit. 210; Led., Fl. Ross. II, 517; Nym., Fl. Eur.; Herd., Fl. Eur. Russ. 66; Cov., Fl. Ark. 196; Engl. Hoffmann, Nat. Pflanz. IV, 5, 244; Gray, Syn. Fl. I, 2, 296; Hart, Fl. Scand. I, 2.

N. Eur. to Caucasus; N. Asia to China.

North America: N. S., N. Br. to Hudson Bay and Saskatchewan to Mont. and Oregon; S. to Va., Mo. and Colo.

Minn. valley: Throughout; infrequent; wet places or shaded banks near water's edge.

HERB.: *Sheldon 1515*, Lake Benton; *Taylor 1154*, Glenwood; *Roberts 65*, Stewart river; *Leiberg 36*, Blue Earth Co.

Bidens connata MUHL. Willd. Spec. III, 1718 (1803).

B. tripartita BIGEL. Fl. Bost. 2 ed. 294 (1824).

B. petiolata NUTT. Journ. Acad. Phil. VII, 99 (1834).

B. connata var. *comosa* GRAY. Man. 5 ed. 261 (1867).

Wats. and Coult., Gray's Man. 6 ed. 284; Mac., Fl. Can. I, 247; Upham, Fl. Minn. 83; Chap., Fl. S. St. 236; Webb., Fl. Neb. 145; Britt., Fl. N. J. 147; Gray, Syn. Fl. I, 2, 296.

North America: N. S., N. Br. to Saskatchewan and Nebr.; S. to Ill., Mo., Ga. and Tex.

Minn. valley: Forest district to Blue Earth Co.; damp places and near streams or pools.

HERB.: *Ballard 712*, Waconia; *Herrick 164*, Minneapolis; this is the var. *pinnata* Watson. *Sandberg 332*, Red Wing.

Bidens frondosa LINN. Spec. 832 (1753).

Wats. and Coult., Gray's Man. 6 ed. 284; Britt., Fl. N. J. 146; Webb., Fl. Neb. 145; Chap., Fl. S. Sts. 236; Mac., Fl. Can. I, 247, 551; Upham, Fl. Minn. 83; Coult., Fl. Colo. 189; Cov., Fl. Ark. 196; Gray, Syn. Fl. I, 2, 296; Coult., Fl. Tex, 223.

North America: N. S., N. Br. to Saskatchewan and Colo.; S. to Gulf of Mexico, Fla. and Tex.

Minn. valley: Throughout; frequent; moist shady places or along roads.

HERB.: *Sheldon 1414*, Lake Benton; *Taylor 1082*, Glenwood; *Bailey 72*, Vermilion Lake; *Sandberg 331*, Cannon Falls; *Herb. Moyer 143*, Montevideo.

HELENIUM LINN. Gen. 664 (1737).

Tetrodus and **Dougaldia** CASS. Dict. LV, 264, 270 (1834).
Mesodetra RAF. Fl. Lud. 141 (1817).
Brassavola ADANS. Fam. II, 127 (1763).
Oxylepis BENTH. Pl. Hartw. 87 (1839).
Leptapoda NUTT. Gen. II, 174 (1818).
Ambliolepis DC. Prodr. V, 667 (1836).
Espeletiopsis SCH. Bip. Herb.
Cephalophora CAV. Ic. VI, 79 (1801).
Actinea JUSS. Ann. Mus. II, 425 (1804).
Graemia HOOK. Exot. Fl. 189 (1823).
Actinella NUTT. Gen. II, 173 (1818).

Baillon, *Hist. Pl.* VIII, 241; Benth. and Hook., *Gen. Pl.* II, 413, 414; Durand, *Ind. Gen. Phan.* 216; Engler and Prantl, *Nat. Pflanz.* IV. 5, 216 (Hoffmann).

Living species: 30±; N. America, especially westward; E. Sts., 2; S. Sts., 4; Canada, 1; W. Tex., 9.

Helenium autumnale LINN. Spec. 866 (1753).

H. pubescens AIT. Hort. Kew. III, 287 (1789).
H. canaliculatum LAM. Journ. Hist. Nat. II, 213 (1792).
H. pumilum WILLD. Enum. Suppl. 60 (1813).
H. longifolium SM. Rees Cycl. (1817?).
H. tubuliflorum DC. Prodr. V, 666 (1836).
H. altissimum and *commutatum* LINK, Ind. Sem. Berol. (1840).
H. grandiflorum and *montanum* NUTT. Trans. Am. Phil. Soc. VII, 384 (1841).

Wats. and Coult., Gray's Man. 6 ed. 287; Coult., Fl. Colo. 196; Upham, Fl. Minn. 84; Chap., Fl. S. St. 239; Mac., Fl. Can. I, 249, 552; Brew. and Wats., Fl. Calif. I, 393; Roth., Wheel Exp. 172; Wats., King Exp. 175; Cov., Fl. Ark. 197; Engl. Hoffmann, Nat. Pflanz. IV, 5, 263; Gray, Syn. Fl. I, 2, 349; Webb., Appx. Neb. 41; Coult., Fl. Tex. 232.

North America: Q. to L. Huron, Arctic circle and Pac.; S. to Oregon, Nev., Arizona, Minn., Ark., Fla.

Minn. valley: Throughout; river banks, lake shores and edges of swamps.

HERB.: *Taylor 1017*, Glenwood; *Sheldon 1312*, Lake Benton; *Sheldon 1464*, Pipestone; *Taylor 1087*, Glenwood; *Sandberg 334*, Goodhue Co.; *Herb. Sheld. 1811*, Minneapolis; *Herb. Moyer 145, 146*, Montevideo.

GAILLARDIA FOUGER. Mem. Ac. Sci. Par. (1786).

Galardia LAM. Enc. Meth. II, 590 (1786).
Calonnea BUCHOZ. Icon. t. 126 (1786).
Virgilia L'HER. Diss. (1789).
Agassizia GRAY and ENGELM. Jour. Bost. Nat. Hist. Soc. VI, 229 (1850).

Guntheria Spreng. Syst. III, 356 (1826).
Cercostylos Less. Syn. Comp. 239 (1832).
Polypteris Less Linn. VI, 218 (1832).
Galorida Reusch. Nom. 251 (1797).

Benth. and Hook., *Gen. Pl.* II, 414; Baillon, *Hist. Pl.* VIII, 241; Durand, *Ind. Gen. Phan.* 216; Engl. and Prantl, *Nat. Pflanz.* IV, 5, 263 (Hoffmann).

Living species: 12; N. and C. America to S. America and Patagonia. N. America, 10; S. America, 1; Texas, Arizona and Utah, 10; Canada, 1–2; S. E. Sts., 2–3; S. and W. Tex., 7.

Gaillardia aristata Pursh, Fl. Am. 573 (1814).
G. bicolor Hook. Fl. I, 315 (1833).
G. bicolor var. *aristata* Nutt. Gen. II, 175 (1818).
G. rustica Cass. Dict. XVIII, 20 (1825).
G. lanceolata DC. Prodr. V, 362 (1836).

Wats. and Coult., Gray's Man. 6 ed. 288; Gray, Syn. Fl. I, 2, 352; Upham, Fl. Minn. 83; Coult., Fl. Colo. 197; Brew. and Wats., Fl. Calif. I, 392; Mac., Fl. Can. I, 250; Coult., Fl. Tex. 233.

North America: Saskatchewan and Brit. Col. to Oregon and California; S. to Minn., Colo. and Tex.

Minn. valley: Reported from N. W. and S. W. districts; rare or local; prairies.

Herb.: *Gedge 18*, Riverton.

DYSSODIA Cav. Ann. Cienc. Nat. VI, 334 (1803).
Boebera Willd. Spec. III, 2125 (1804).
Clomenocoma Cass. Dict. IX. 416 (1825).
Comaclinium Scheidw. Pl. Serres, 756 (——).
Rosilla Less. Syn. Comp. 245 (1832).
Lebetina Cass. Dict. XXV, 394 (1825).
Adenophyllum Pers. Syn. II, 458 (1807).
Willdenowa Cav. Ic. 61 (1791).
Schlechtendahlia Willd. Spec. III, 2125 (1804).
Boebera Less. Syn. Comp. 237 (1832).
Hymenatherum Cass. Bull. Philom. (1817).
Aciphyllaea A. Gray, Pl. Fendl. 91 (1849).
Gnaphalopsis DC. Prodr. VII, 258 (1839).
Thymophylla Lag. Elench. Matr. 25 (1816).
Lowellia A. Gray, Pl. Fendl. 89 (1849).

Baillon, *Hist. Pl.* VIII, 253 (*sub Tagetes* Linn.); Benth. and Hook., *Gen. Pl.* II, 408, 410; Engler and Prantl, *Nat. Pflanz.* IV, 5, 265; Durand, *Ind. Gen. Phan.* 215.

Living species: 35±; Central and S. W. N. America; 1 sp., Peru to Patagonia. U. S., 16; all in W. and S. W. region except *D. papposa* (Vent.).

Dyssodia papposa (Vent.) Hitchcock, Fl. Ames. 503 (1891).

Tagetes papposa Vent. Hort. Cels (1800).
Boebera chrysanthemoides Willd. Spec. III, 2125 (1804).
Dyssodia chrysanthemoides Lag. Nov. Gen. et Spec. 29 (1816).
Boebera glandulosa Pers. Syn. II, 459 (1807).
Dyssodia fastigiata DC. Prodr. V, 639 (1836).

Wats. and Coult., Gray's Man. 6 ed. 288; Webb., Fl. Neb. 145; Upham, Fl. Minn. 83; Mac., Fl. Can. I, 2, 251; Coult., Fl. Colo. 197; Cov., Fl. Ark. 197; Engl. Hoffmann, Nat. Pflanz. IV, 5, 265; Gray, Syn. Fl. I, 2, 356; Coult., Fl. Tex. 236.

North America: Ont. to Minn.; S. to N. Y., Ga., La.; W. to Neb., Colo., Tenn., Ark., Arizona and Mex.

Minn valley: S. W. edge; infrequent; banks of streams or cool roadsides.

Herb.: *Leiberg 37*, Rock Co.

ACHILLEA Linn. Gen. 661 (1737).
Ptarmica Neck. Elem. I, 15 (1790).
Millefolium Tourn. Inst. 460 (1700).

Baillon, *Hist. Pl.* VIII, 279 (*sub Santolina*); Durand, *Ind. Gen. Phan.* 217; Engler and Prantl, *Nat. Pflanz.* IV, 5, 272 (Hoffmann); Benth. and Hook., *Gen. Pl.* II, 419.

Living species: 80±; N. temperate regions, especially in old world. Russia, 20; Europe, 30; Russian Europe, 11; N. America, 3; Canada, 3; S. Sts., 1; E. Sts., 1; California, 1; Pl. Wheel., 1; W. Tex., 1.

Achillea millefolium Linn. Spec. 1267 (1753).
A. tomentosa Pursh, Fl. Am. 319 (1814).
A. setacea Schwein. Long. Exp. II, 119 (1825).
A. millefolium var. *nigrescens* E. Mey. Pl. Lab. (1830).
A. lanulosa Nutt. Journ. Acad. Phil. VII, 36 (1834).
A. gracilis and *occidentalis* DC. Prodr. VI, 27 (1837).
Ptarmica borealis DC. Prodr. VI, 27 (1837).

Wats. and Coult., Gray's Man. 6 ed. 289; Britt., Fl. N. J. 147; Webb., Fl. Neb. 145; Cov., Fl. Ark. 197; Upham, Fl. Minn. 84; Mac., Fl. Can. I, 251, 552, *in var.*; Coult., Fl. Colo. 198; Brew. and Wats., Fl. Calif. I, 400; Chap., Fl. S. St. 242; Forbes and Hems., Fl. Sin. 436; Led., Fl. Ross. II, 531; Nym., Fl. Eur.; Hook., Fl. Gt. Brit. 212; Miyabe, Fl. Kur. 241 *in var.*; Herd., Fl. Eur. Russ. 66; Wats., King Exp. 179; Roth., Wheel. Exp. 174, 366; Engl. Hoffmann, Nat. Pflanz. IV, 5, 272; Gray, Syn. Fl. I, 2, 363; Hart., Fl. Scand. I, 5; Coult., Fl. Tex. 239.

All N. hemisphere in old world; Azores to Manchuria and in tropical mt. ranges; Shetland and Arct. Russ. to Caucasus; China; Kuriles and Himalayas; Australasia.

North America: Greenland to Alaska; S. to Fla., Tex. and Mex.

Minn. valley: Throughout; common; hills, fields, edges of woods, shores of lakes.

HERB.: *Sheldon 360*, Madison Lake; *Sheldon 1187*, Lake Benton; *Taylor 564*, Minnesota lake; *Ballard 178*, Jordan, Scott Co.; *Ballard 735*, Waconia; *Taylor 868*, Glenwood; *Taylor 564*, Minnesota lake; *Roberts 66*, Grand Marais; *Kassube 140*, Minneapolis; *Roberts 67*, Poplar river; *Leonard 26*, Duluth; *Leonard 27*, Spring Valley; *Bailey 159*, Vermilion lake; *Roberts 68*, Grand Marais; *Sandberg 335*, Cannon Falls; *Herb. Wickershiem 80*, Idlewild; *Herb. Moyer 146*, Montevideo.

ARTEMISIA LINN. Gen. 644 (1737).

Oligosporus CASS. Bull. Philom. (1817).

Absinthium GAERT. Fruct. II, 393 (1791).

Picrothamnus NUTT. Trans. Phil. Soc. 2, VII, 417 (1841).

Baillon, *Hist. Pl.* VIII, 285; Benth. and Hook., *Gen. Pl.* II, 435; Durand, *Ind. Gen. Phan.* 220; Engl. Hoffmann, *Nat. Pflanz.* IV, 5, 281.

Living species: 200± described; 150— reduced (Durand); N. hemisphere; S. America; Sandwich Islands. Europe, 50; Russia, 85; Russian Europe, 30; North America, 40; Canada, 22–25; E. Sts., 11; Rocky mts., 23; S. Sts., 3; California, 14; Pl. King, 13; Pl. Wheel., 10; W. Tex., 8.

Artemisia frigida WILLD. Spec. III, 1838 (1803).

A. sericea NUTT. Gen. II, 143 (1818).

A. virgata RICH. Frankl. Journ. (1823).

A. frigida var. *gmeliniana* BESS. Hook. Fl. Bor.-Am. I, 321 (1833).

Wats. and Coult., Gray's Man. 6 ed. 291; Webb., Fl. Neb. 144; Mac., Fl. Can. I, 259; Upham, Fl. Minn. 86; Coult., Fl. Colo. 201; Wats., King Exp. 184; Roth., Wheel. Exp. 176, 217; Gray, Syn. Fl. I, 2, 369; Gmel., Fl. Sib. 63; Coult., Fl. Tex. 240.

N. Asia.

North America: Man. and Saskatchewan to Rocky mts. and N. to 58° on Mackenzie; S. to Minn. and Tex.; W. to Idaho, Nev. and N. Mex.

Minn. valley: Throughout; banks and hillsides or on rocky ledges and high ridges.

HERB.: *Sheldon 1480*, Pipestone; *Holzinger 131*, Winona Co.; *Herrick 170*, Minneapolis; *Leiberg 40*, Pipestone Co.; *Sandberg 340*, Red Wing; *MacM.* and *Sheld. 47*, Brainerd.

Artemisia biennis WILLD. Phytogr. 11 (1794).

A. hispanica JACQ. Ic. Rar. 172 (1781) *not Lam.*

Wats. and Coult., Gray's Man. 6 ed. 291; Britt., Fl. N. J. 149; Webb., Fl. Neb. 144: Upham, Fl. Minn. 85; Mac., Fl. Can. I, 259; Coult., Fl. Colo. 201; Wats., King Exp. 183; Gray, Syn. Fl. I, 2, 370.

Kamstk. and N. India, *fide* Gray.

North America: Hudson Bay to Mackenzie and Pac.

coast; S. to Oregon and S. Calif.; E. to Minn., Neb., Mo., Tenn. and spreading also to N. Y., N. J. and Penn.

Minn. valley: W. districts especially, but probably throughout; sandy or gravelly banks.

HERB.: *Sheldon 1592*, Lake Benton; *Sandberg 339*, Red Wing; *Herb. Moyer 149*, Montevideo.

Artemisia gnaphalodes (NUTT.) Gen. II, 143 (1818) *emend.*

A. integrifolia PURSH, Fl. Am. (1814) *in part.*

A. ludoviciana NUTT. Gen. II, 143 (1818) *pro parte.*

A. ludoviciana NUTT. T. and G. Fl. II, 420 (1841).

A. purshiana, douglasiana, hookeriana BESS. Abrot. 59 (1834).

A. vulgaris vars. *ludoviciana* and *gnaphalodes* OK. Rev. Gen. I, 309 (1891).

Wats. and Coult., Gray's Man. 6 ed. 291; Mac., Fl. Can. I, 257; Webb., Fl. Neb. 145; Upham, Fl. Minn. 85; Coult., Fl. Colo. 202; Brew. and Wats., Fl. Calif. I, 404; Roth., Wheel. Exp. 176, 366; Wats., King Exp. 183; Gray, Syn. Fl. I, 2, 372; Engl. Hoffmann, Nat. Pflanz. IV, 5, 282; Coult., Fl. Tex. 240.

North America: Red and Milk valleys to Pac. coast and 49° N. lat.; S. in Calif. to Monterey; E. to Saskatchewan, Mich., Minn., Ill., Tex. and Mexico.

Minn. valley: Throughout; dry or sterile banks and along sparsely wooded ridges.

HERB.: *Taylor 720*, Minnesota lake; *Sheldon 935*, Redwood Falls; *Sheldon 1131*, Springfield; *Sheldon 469*, Madison Lake; *Taylor 1125*, Glenwood; *Taylor 834*, Glenwood; *Gedge 8*, Detroit City. The last four are *forma glabrata; Sheldon 1511*, Lake Benton; *Taylor 145*, Janesville; *Oestlund 102*, Minneapolis; *Gedge 9*, Moorhead; *Holzinger 130*, Winona; *Sandberg 338*, Cannon Falls; *Herb. Moyer 147, 148*, Montevideo; *Herb. Wickersheim 81*, Ash lake, Lincoln Co.

Artemisia longifolia NUTT. Gen. II, 142 (1818).

? *A. integrifolia* PURSH, Fl. Am. (1814) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 291; Webb., Fl. Neb. 145; Upham, Fl. Minn. 85; Coult., Fl. Colo. 202; Gray, Syn. Fl. I, 2, 372; Mac., Fl. Can. I, 256.

North America: Saskatchewan and Minn. to Neb., Colo. and Mont.

Minn. valley: Reported from S. W. Minn.; banks and ledges; rare.

Artemisia serrata NUTT. Gen. II, 142 (1818).

A. ludoviciana var. *serrata* T. and G. Fl. II, 420 (1841).

Wats. and Coult., Gray's Man. 6 ed. 291; Upham. Fl. Minn. 85; Gray, Syn. Fl. I, 2, 372.

North America: Ill., Minn. and Dak.

Minn. valley: Reported from Coteau des Prairies; moist depressions and near sloughs.

Artemisia dracunculoides PURSH, Fl. Am, 742 (1814).

A. dracunculus PURSH, Fl. Am. 521 (1814).
A. cernua NUTT. Gen. II, 143 (1818).
A. nuttalliana BESS. Hook. Fl. Bor.-Am. I, 326 (1833).
A. inodora HOOK. and ARN. Bot. Beech. 150 (1841).

Wats. and Coult., Gray's Man. 6 ed. 290; Webb., Fl. Neb. 144; Mac., Fl. Can. I, 255, 553; Upham, Fl. Minn. 85; Coult., Fl. Colo. 200; Brew. and Wats., Fl. Calif. I, 404; Roth., Wheel. Exp. 176; Wats., King Exp. 181; Gray, Syn. Fl. I, 2, 369; Coult., Fl. Tex. 240.

North America: Man. to Rockies, Brit. Col. and Peace river reg.; S. to Minn., Colo., Tex., Arizona and Calif. in Sierras; E. to Ill. and Neb

Minn. valley: Throughout; banks of streams, waste places, edges of sandy thickets.

HERB.: *Taylor 817*, Glenwood; *Taylor 614*, Minnesota lake; *Holzinger 129*, Winona; *Sandberg 336*, Cannon Falls; *Herrick 167*, Minneapolis.

Artemisia canadensis MICHX. Fl. N. Am. II, 129 (1803).

A. peucedanifolia JUSS. *in herb.*
A. campestris PURSH, Fl. Am. 521 (1814).
A. desertorum BESS. Hook. Fl. Bor.-Am. I, 325 (1833) *in part.*
A. commutata BESS. Dracun. 68 (1835).
? *A. pacifica* NUTT. Trans. Am. Phil. Soc. VII, 399 (1841).
? *A. lewisii* T. and G. Fl. II. 417 (1841) *in part.*

Wats. and Coult., Gray's Man. 6 ed. 290; Mac., Fl. Can. I, 256; Upham, Fl. Minn. 85; Webb., Fl. Neb. 144; Coult., Fl. Colo. 200; Roth., Wheel. Exp. 176; Cov., Fl. Ark. 197?; Gray, Syn. Fl. I, 2, 368 and 369; Engl. Hoffm., Nat. Pflanz. IV, 5, 282; Coult., Fl. Tex. 240.

N. W. Asia; *fide* Gray.

North America: Can. throughout to 64° N. lat.; S. to Utah, Arizona and N. Mex. in Rockies; to Washington and to Minn., Colo., Neb. and Ark.

Minn. valley: Reported from N. E. and N. edges; sandy shores of lakes and streams.

Artemisia caudata MICHX. Fl. N. Am, II, 129 (1803).

Wats. and Coult., Gray's Man. 6 ed. 290; Britt., Fl. N. J. 148; Upham, Fl. Minn. 85; Mac., Fl. Can. I, 256; Chap., Fl. S. St. 242; Gray, Syn. Fl. I, 2,368; Coult., Fl. Tex. 239.

North America: Ont. and N. H. to N. J. and N. Car.; W. to Minn., Man. and Mich.; S. to Kan. and Mo.

Minn. valley: Throughout; waste or sandy places; edges of thickets and along streams.

HERB.: *Sheldon 1392*, Lake Benton; *Sheldon 1046*, Sleepy Eye; *Taylor 1142*, Glenwood; *Herrick 168*, Minnetonka; *Leiberg 38*, Blue Earth Co.; *Herrick 169*, Minneapolis; *Sandberg 337*, Goodhue Co.; *Leiberg 39*, Rock Co.; *Oestlund 103*, Minneapolis.

ERECHTITES RAF. Fl. Lud. 65 (1817).

Neoceis CASS. Bull. Philom. (1820).

Baillon, *Hist. Pl.* VIII, 260 (*sub Senecio*); Benth.and Hook., *Gen. Pl.* II, 443; Durand, *Ind. Gen. Phan.* 221; Engl. Hoffm., *Nat. Pflanz.* IV, 5, 291.

Living species: 12±; tropical and subtropical America; warmer N. Amer.; Australia and New Zealand; introd. in Asia. N. America, 1 sp.

Erechtites hieracifolia (LINN.) RAF. DC. Prodr. VI, 294 (1837).

Senecio hieracifolius LINN. Spec. 866 (1753).
Cineraria canadensis WALT. Fl. Car. 207 (1788).
Erechtites praelonga and *erecta* RAF. Fl. Lud. 65 (1817).

Wats. and Coult., Gray's Man. 6 ed. 295; Britt., Fl. N. J. 149; Mac., Fl. Can. I, 262; Webb., Fl. Neb. 144; Upham, Fl. Minn. 86; Chap., Fl. S. St. 244; Griseb., Fl. W. I; Cov., Fl. Ark. 197; Gray, Syn. Fl. I, 2, 396; Engl. Hoffm., Nat. Pflanz. IV, 5, 291.

S. America; W. Indies to Buenos Ayres; nat. in Mauritius.

North America: Newf. to Saskatchewan; S. to Gulf of Mexico and Fla.

Minn. valley: Forest and S. central districts; clearings and waste places in woodland or thickets.

HERB.: *Sandberg 344*, Red Wing.

SENECIO LINN. Gen. 647 (1737).

Cacalia LINN. Gen. 649 (1737) p. p.
Cineraria LINN. Gen. 957 (1737).
Tephroseris SCHUR. Transsylv. 343 (1866).
Jacobaea THUNB. Prodr. Cap. (1794).
Obaejaca CASS. Dict. XXXV, 270 (1826).
Anecio NECK. Elem. I. 28 (1790).
Herbichia ZAWADSK. Enum. Galic. 198 (1835).
Farobaea SCHR. ex Col. Hort. Rip. App. IV (1828).
Eudorus CASS. Dict. XLI, 166 (1826).
Aspelina CASS. l. c. (1826).
Sclerobasis CASS. Philom. (1818).
Acleia DC. Prodr. VI, 340 (1837).
Hubertia BONG. Voy. Afr. I, 334 (——).
Synarthron CASS. Dict. LI, 457 (1834).
Cissampelopsis MIQ. Ind. Bat. II, 102 (1859).
Bethencourtia CHOIS. Buch. Can. (1819).
Pericallis WEBB, Phyt. Can. 103, 106 (1838).
Mesogramma DC. Prodr. VI, 304 (1837).

Madaractis DC. Prodr. VI, 322 (1837).
Doronica WIGHT. Ic. 1124, 1129 (1843).
Madocarpus WIGHT. Ic. 1152 (1843).
Brachyrhyncos LESS. Syn. Comp. 392 (1832).
Lachanodes DC. Guill. Arch. Bot. II, 332 (1833).
Pladaroxylon ENDL. Gen. 461 (1840) *in part.*
Traversia HOOK. f. Handb. N. Z. Fl. 163 (1867).
Centropappus HOOK. f. Lond. Jour. Bot. VI, 124 (1846).
Carderina CASS. Dict. XXXV, 272 (1826).
Delaira LEM. Ann. Sci. Nat. 3, I, 379 (1844).
Dorobaea CASS. Dict. XLVIII, 453 (1834).
Roldana LLAV. and LEX. Nov. Mex. Veg. II, 10 (1826).
Haplosticha PHILLIPI, Linn. XXX, 193 (1856).
Adenotrichia LINDL. Bot. Reg. XIV, t. 1190 (1828).
Danaa COLLA, Mem. Tur. XXXVIII, 27 (1835).
Brachypappus SCH. Bip. Flora. 119 (1855).
Metazanthus MEYEN, Reise I, 356 (1834).
Ligularia CASS. Bull. Philom. (1816).
Hoppea REICH. Ic. Ex. I, 8, 10 (1827).
Erythrochaete S. and Z. Fam. Nat. Jap. II, 64 (1843).
Farfugium LINDL. Gard. Chron. 4 (1857).
Senecillis GAERTN. Fruct. II, 453 (1791).
Pericalia, Psacalium, Pentacalia, Aetheolaena CASS. Dict. l. c. (1834).
Pentanthus HOOK. and ARN. Comp. Bot. Mag. I, 32 (1835).
Odontotrichum ZUCC. Baier. Acad. 311 (1832).
Sciadioseris KUNZE, Bot. Zeit. 349 (1851).
Rugelia SCHUTTLEW. Chap. Fl. S. St. 246 (1860).
Syneilesis MAX. Prim. Amur. 165 (1859).
Pithosilum CASS. Dict. XLI, 164 (1834).
Kleinia HAW. Syn. Succ. 312 (1812).
Microchaete BENTH. Hartw. 209 (1841).
Gynoxys DC. Prodr. VI, 326 (1837).
Cladopogon SCH. BIP. Sem. Hamb. (1852).
Pterosenecio SCH. BIP. ex. Dur. Ind. Gen. l. c. (1888).
Willkommia SCHULTZE, ex. Dur. Ind. Gen. l. c. (1888).
Cacalianthemum DILL. Elth. I, 54 (1732).
Notonia DC. Guill. Arch. Bot. II, 518 (1833).
Bedfordia DC. l. c. 332 (1833).
Brachyglottis FORST. Char. Gen. 91 (1776).
Gynura CASS. Dict. XXXIV, 391 (1826).
Crassocephalum MOENCH, Meth. 516 (1794).
Cremocephalum CASS. Dict. XXXIV, 390 (1826).
? **Xenocarpus** CASS. l. c. LIX, 108 (1834).
Emilia CASS. l. c. XIV, 405 (1825).
Stilpnogyne DC. Prodr. VI, 293 (1837).

Baillon, *Hist. Pl.* VIII, 258; Benth. and Hook., *Gen. Pl.* II, 446 *seq.*; Durand, *Ind. Gen. Phan.* 221; Engl. Hoffm., *Nat. Pflanz.* IV, 5, 296.

Living species: 1250+; cosmopolitan. N. America, 75±; Rocky mts., 21; California, 20; Pl. King, 13; Pl. Wheel., 17; E. Sts., 10; W. Tex., 7. Principally S. and W.

Senecio ovatus (WALT.).

Cacalia ovata WALT. Fl. Car. 196 (1788).

C. tuberosa NUTT. Gen. II, 138 (1818).

C. paniculata and *pteryantha* RAF. Ann. Nat. 14 (1820).

Wats. and Coult., Gray's Man. 6 ed. 294; Mac., Fl. Can. I, 268, 555; Upham, Fl. Minn. 86; Webb., Fl. Neb. 144; Chap., Fl. S. St. 244; Mac., Fl. Can. II, 335; Cov., Fl. Ark. 198; Gray, Syn. Fl. I, 2, 396; Coult., Fl. Tex. 242.

North America: Ont. to Lake Huron and Minn.; S. to Neb., Ohio, Ark., Alab., Ga. and Fla.

Minn. valley: Forest district; W. to Cottonwood and Chippewa valleys; damp prairies and openings.

HERB.: *Sheldon 1187*, New Ulm; *Sheldon 687*, Waseca; *Taylor 565*, Minnesota lake; *Sandberg 346*, Cannon Falls.

Senecio atriplicifolius (LINN.) HOOK. Fl. Bor.-Am. I, 332 (1833).

Cacalia atriplicifolia LINN. Spec. 835 (1753).

Senecio atriplicifolius var. *reniformis* HOOK. Fl. Bor.-Am. I, 332 (1833).

Cacalia gigantea NEES, Ind. Sem. Vratisl. (1842).

Wats. and Coult., Gray's Man. 6 ed. 294; Britt., Fl. N. J. 150; Webb., Fl. Neb. 144; Upham., Fl. Minn. 86; Mac., Fl. Can. I, 268; Chap., Fl. S. St. 244; Cov. Fl. Ark. 198; Gray, Syn. Fl. I, 2, 395.

North America: Ont. to N. J. and Fla.; W. to Minn., Neb. and Mo.

Minn. valley: S. E. edge, Rice Co.; rich woodland and moist banks or shores.

HERB.: *Sandberg 345*, Goodhue Co.

Senecio reniformis (MUHL.).

Cacalia reniformis MUHL. Willd. Spec. III, 1735 (1803).

Wats. and Coult., Gray's Man. 6 ed. 294; Britt., Fl. N. J. 150; Chap., Fl. S. St. 244; Upham, Fl. Minn. 86; Gray, Syn. Fl. I, 2, 395.

North America: N. J. to N. Car. and Tenn.; W. to Ills. and Minn.

Minn. valley: S. E. edge; rare; rich, deep woods.

HERB.: *Leonard 28*, Sumner.

Senecio lugens RICH. Frankl. Jour. 2 ed. 31 (1825).

S. lugens vars. *hookeri* and *parryi* EAT. King. Exp. 188 (1871).

Cineraria pratensis HERD. Pl. Radd. II, 127 (——).

Cacalia lugens MACM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 294; Webb., Fl. Neb. 144; Upham, Fl. Minn. 87; Mac., Fl. Can. I, 263, 554; Coult., Fl. Colo. 209; Brew. and Wats., Fl. Calif. I, 413; Led., Fl. Ross. II, 644; Wats., King Exp. 188: Roth., Wheel. Exp. 177; Gray, Syn. Fl. I, 2, 388; Coult., Fl. Tex. 242.

Circumpolar.

North America: Rocky mts., Fraser river, 66° N. lat.

to Kotzebue Sound and Bon Esperance, Alaska; S. in mts. to Mexico; W. to Calif. and Pac. coast; E. to Minn., Iowa, Neb., Dakota.

Minn. valley: W. districts; swampy or moist places in prairie, edges of lakes.

HERB.: *Leiberg 43,* "Minnesota"; *Herb. Wickersheim 84,* Idlewild, Lincoln Co.; *Herb. Moyer 153,* Granite Falls.

Senecio integerrimus NUTT. Gen. II, 165 (1818).

Cacalia integerrima MACM. MSS. (1891).

Gray, Syn. Fl. I, 2, 388; Mac., Fl. Can. I, 554; Upham, Fl. Minn. 87.

North America: Dak. and Minn. to Saskatchewan.

Minn. valley: Reported from S. W. district; doubtful; prairies and ridges.

Senecio tomentosus MICHX. Fl. Am. II, 119 (1803).

Cineraria heterophylla PURSH, Fl. Am. 528 (1814).

Senecio integrifolius var. *heterophyllus* NUTT. Gen. II, 165 (1818).

S. aureus UPHAM, Fl. Minn. 87 (1883) *as to specs. Kassube.*

Wats. and Coult., Gray's Man. 6 ed. 293; Gray, Syn. Fl. I, 2, 390; Britt., Fl. N. J. 150; Chap., Fl. S. St. 245.

North America: N. J., Del. and Penn. to Fla.; W. to Minn. and Ark.

Minn. valley: N. E. edge; open and moist places.

HERB.: *Kassube 279,* Minneapolis; *280,* Minnehaha.

Senecio aureus LINN. Spec. 870 (1753).

S. gracilis PURSH, Fl. Am. 529 (1814).

S. fastigiatus SCHWEIN. Ell. Sk. II, 331 (1824).

Cacalia aurea MACM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 293; Britt., Fl. N. J. 150; Webb., Fl. Neb. 144; Upham, Fl. Minn. 87; Chap. Fl. S. St. 245; Brew. and Wats., Fl. Calif. I, 411; Coult., Fl. Colo. 210; Wats., King Exp. 189; Roth., Wheel. Exp. 366?; Gray, Syn. Fl. I, 2, 391; Cov., Fl. Ark. 197; Coult., Fl. Tex. 242.

North America: Newf.?, N. S., N. Br., Rocky mts. and Pac. coast to 49° N. lat.; S. to N. J. and N. Car., and W. to Nev. and Pac. coast of California.

Minn. valley: Throughout; moist, marshy or swampy places; abundant.

HERB.: *Ballard 18,* Chaska; *Taylor 47,* Elysian; *Ballard 475,* Prior's lake, Scott Co.; *Sheldon 309,* Madison Lake, Blue Earth Co.; *Herrick 173,* Minneapolis; *Sandberg 348,* Center City; *Kassube 142,* Minneapolis; *Sandberg 349,* Tower; *Herb. Sheld. 1808,* Minneapolis; *Herb. Wickersheim 83,* Idlewild, Lincoln Co.; *Herb. Moyer 152,* Montevideo.

Senecio aureus LINN. var. **pauperculus** (MICHX.).

S. pauperculus MICHX. Fl. N. Am. II, 120 (1803).

S. balsamitae MUHL. Willd. Spec. III, 1999 (1804).
S. plattensis NUTT. Trans. Am. Phil. Soc. VII, 413 (1841).
S. aureus var. *balsamitae* T. and G. Fl. II, 443 (1841).
Cacalia aurea var. *paupercula* MACM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 293; Britt., Fl. N. J. 150; Webb., Fl. Neb. 144; Mac., Fl. Can. I, 265, 554; Chap., Fl. S. St. 245; Upham, Fl. Minn. 87; Brew. and Wats., Fl. Calif. I, 412; Gray, Syn. Fl. I, 2, 391; Gray, Syn. Suppl. 454.

North America: Anticosti, N. S., N. Br., Q., Ont. to Brit. Col. and Selkirk mts.; S. to N. J., Va. and Tenn.; W. to Neb., Tex., Colo. and Oregon.

Minn. valley: Throughout; high dry knolls and rocky ledges; headlands and ridges.

HERB.: *Sheldon 1479,* Pipestone City; *Ballard 142,* Chaska; *Ballard 518,* Prior's lake, Scott Co.; *Taylor 229,* Janesville; *Sheldon 148,* Madison Lake, Blue Earth Co.; *Taylor 1156,* Glenwood; *Herrick 174,* St. Louis river; *Arthur 50,* Vermilion lake; *Sheldon 1399,* Lake Benton.

Senecio aureus LINN. var. **obovatus** (MUHL.) T. and G. Fl. II, 442 (1841).

S. obovatus MUHL. Willd. Spec. III, 1999 (1804).
S. aureus var. *gracilis* HOOK. Fl. Bor.-Am. I, 333 (1833).
S. elliottii T. and G. Fl. II, 443 (1841).
Cacalia aurea var. *obovata* MACM. MSS. (1891).

Wats. and Coult., Gray's Man. 6 ed. 293; Britt., Fl. N. J. 150; Mac., Fl. Can. I, 265; Upham, Fl. Minn. 87; Gray, Syn. Fl. I, 2, 391; Coult., Fl. Tex. 242.

North America: N. S. to Brit. Col.; S. to Minn., Ind. and Georgia.

Minn. valley: Throughout forest and N. W. district; drier places and damp prairies.

HERB.: *Taylor 761,* Glenwood; *Kassube 143,* Minneapolis.

Senecio palustris (LINN.) HOOK. Fl. Bor.-Am. I, 334 (1833).

Cineraria palustris LINN. Spec. ed. 2, 1243 (1762).
C. congesta R. Br. Parr. Voy. (1823).
Senecio palustris var. *congestus* HOOK. Fl. Bor.-Am. I, 334 (1833).

Wats. and Coult., Gray's Man. 6 ed. 293; Mac., Fl. Can. 263; Upham, Fl. Minn. 86; Mac., Fl. Can. I, 554; Hook., Fl. Gt. Brit. 219; Trautv., Fl. Sib. 75; Gray, Syn. Fl. I, 2, 394; Hart., Fl. Scand. I, 9.

N. Europe to France and Austria; N. Asia.

North America: N. S. and Greenland to Saskatchewan and far N. to Kotzebue Sound and Wainright Inlet, Alaska; S. to Minn., Dak. and Iowa.

Minn. valley: Forest district and N. W. districts; edges of swamps, streams or lakes.

HERB.: *Ballard 519*, Prior's lake, Scott Co.; *Ballard 499*, Scott Co.; *Taylor 383*, Janesville; *Taylor 316*, Janesville; *Sheldon 106½*, Elysian; *Herrick 172*, Sandy lake; *Sandberg 347*, Center City; *Herb. Moyer 151*, Stevens lake, Chippewa Co.

CNICUS LINN. Gen. 633 (1737).

Picnomon ADANS. Fam. II, 116 (1763).
Breea LESS. Syn. Comp. 9 (1832).
Onopordum LINN Gen. 927 (1737).
Acanos ADANS. Fam. II, 116 (1763).
Lamyra, Platyraphium, Ptilostemon, Orthocentron, Lophiolepis, Eriolepis, Notobasis CASS. Dict. XXV–XLIV (1826).
Echenais CASS. Bull. Philom. (1818).
Spanioptilon LESS. Comp. Syn. 10 (1832).
Xylanthena, Cephalonoplos NECK. Elem. 67, 68 (1790).
Chamaepeuce DC. Prodr. VI, 657 (1837).
Ancathia DC. Guill. Arch. Bot. II, 331 (1833).
Picnocomon and **Acarna** VAILL. Acad. Par. (1718).
Epitrachys K. KOCH, Linn. XXIV, 396 (1850).
Ornitrophis CASS. ex Dur. l. c. (1888).
Cirsium DC. Fl. Fr. IV, 110 (1805).

Baillon, *Hist. Pl.* VIII, 5 (*sub Carduus*); Benth. and Hook., *Gen. Pl.* II, 468; Durand, *Ind. Gen. Phan.* 225.

Living species: 175±; Europe; Asia; Africa; N. and S. America; extra-tropical. Introduced elsewhere. Europe, 65; Russia, 55; Russian Europe, 22; North America, 35; Rocky mts., 12; Canada, 13; E. Sts., 7; S. Sts., 9; California, 12-14; Pl. King, 5; Pl. Wheel., 8; W. Tex., 6.

Cnicus odoratus (MUHL.) B. S. P. Cat. N. Y. (1888).

Carduus odoratus MUHL. Cat. 70 (1813).
Carduus pumilus and var. *hystrix* NUTT. Gen. II, 130 (1818).
Cirsium pumilum SPRENG. Syst. III, 375 (1826).
Cnicus pumilus TORR. Compend. 282 (1826).

Wats. and Coult., Gray's Man. 6 ed. 296; Britt., Fl. N. J. 151; Mac., Fl. Can. I, 269; Upham, Fl. Minn. 88; Gray, Syn. Fl. I, 2, 401.

North America: Maine to Penn. and N. J.; W, to Man. and Minn.

Minn. valley: N. E., N. and N. W. districts; dry fields or sparsely wooded ridges.

HERB.: *Ballard 574*, Prior's lake, Scott Co.; *Taylor 1013*, Glenwood; *Sandberg 351*, Cannon Falls.

Cnicus muticus (MICHX.) PURSH, Fl. Am. 506 (1814).

Cirsium muticum MICHX. Fl. Am. II, 89 (1803).
Carduus muticus and *glaber* (?) NUTT. Gen. II, 129 (1818).
Cnicus glutinosus BIGEL. Fl. Bost. 2 ed. 291 (1824).
Cirsium bigelovii DC. Prodr. VI, 640 (1837).

Wats. and Coult., Gray's Man. 6 ed. 296; Britt., Fl. N. J. 151; Upham,

Fl. Minn. 88; Chap., Fl. S. St. 247; Mac., Fl. Can. I, 270; Gray, Syn. Fl. I, 2, 405.

North America: Newf., Anticosti, N. S., N. Br. to Saskatchewan and Minn.; S. to N. Eng., N. J., Va., Fla. and La.

Minn. valley: Forest district; swamps and near lake shores.

HERB.: *Bailey 33*, Vermilion lake; *Sandberg 350*, Goodhue Co.; *Taylor 700*, Minnesota lake.

Cnicus discolor MUHL. Willd Spec. III, 1670 (1803).

Carduus discolor NUTT. Gen. II, 130 (1818).

Cirsium discolor SPRENG. Syst. III, 373 (1826).

Cnicus altissimus var. *discolor* GRAY, Proc. Am. Acad. XIX, 57 (1883).

Wats. and Coult., Gray's Man. 6 ed. 296; Chap., Fl. S. St. 247; Mac., Fl. Can. I, 270; Webb., Fl. Neb. 144; Upham, Fl. Minn. 88; Britt., Fl. N. J. 151; Cov., Fl. Ark. 198; Gray, Syn. Fl. I, 2, 404.

North America: N Eng. and Ont. to Minn. and Neb.; S. to N. J., Ill., Mo., Ark. and Va

Minn. valley: N. districts; meadows, fields, copses and low thickets.

HERB.: *Ballard 761*, Waconia; *Taylor 741*, Glenwood; *Herrick 175*, Minneapolis; *Oestlund 104*, Minneapolis; *Kassube 144*, Minneapolis.

Cnicus altissimus (LINN.) WILLD. Spec. III, 1671 (1803).

Carduus altissimus LINN. Spec. 824 (1753).

Cirsium diversifolium DC. Prodr. VI, 640 (1837).

Wats. and Coult., Gray's Man. 6 ed. 296; Britt., Fl. N. J. 151, *in var.*; Webb., Fl. Neb. 144; Upham, Fl. Minn. 88; Mac., Fl. Can. I, 270 *in var.*; Coult., Fl. Colo. 214; Chap., Fl. S. St. 247; Cov., Fl. Ark. 198; Gray, Syn. Fl. I, 2, 404; Coult., Fl. Tex. 243.

North America: Mass. to Minn. and Neb.; S. to Miss., N. Car., Fla., Ark. and Tex.

Minn. valley: S. central,. S. W., W. and N. W. districts; fields and borders of thickets or streams.

HERB.: *Taylor 1026*, Glenwood; *Taylor 728*, Glenwood; *Herb. Wickersheim 85*, Ash lake, Lincoln Co.; *Herb. Moyer 154*, Chippewa river, near Montevideo.

Cnicus undulatus (NUTT.) GRAY, Proc. Am. Acad. X, 42 (1874).

Carduus undulatus NUTT. Gen. II, 130 (1818).

C. discolor HOOK. Fl. Bor.-Am. I (1833) *in part.*

C. douglasii DC. Prodr. VI, 643 (1837).

C. hookerianum HOOK. Lond. Journ. Bot. VI, 253 (1854).

Wats. and Coult., Gray's Man. 6 ed. 296; Webb., Fl. Neb. 144; Mac., Fl. Can. I, 269; Upham, Fl. Minn. 88; Coult., Fl. Colo. 214; Brew. and

Wats., Fl. Calif. I, 418; Wats., King Exp. 204, 422; Roth., Wheel. Exp. 179; Gray, Syn. Fl. I, 2, 403; Coult., Fl. Tex. 243.

North America: Man. to Rockies, N. W. T. and Brit. Col.; W. to limit of prairies; S. to Oregon, Gt. lakes, Minn., Kan. and N. Mex.

Minn valley: Reported from plains of W. district; doubtful or rare; fields and prairies.

HERB.: ?*Roberts 70*, Grand Marais.

LACTUCA LINN. Gen. 622 (1737).

Brachyramphus DC. Prodr. VII, 176 (1838-39).
Phaenixopus CASS. Dict. XXXIX, 391 (1826).
Phaenopus DC. Prodr. VII, 176 (1838-39).
Cyanoseris SCHUR. Transsylv. 369 (1866).
Pyrrhopappus A. RICH. Abyss. Fl. I, 463 (1847).
Cicerbita WALLR. Sched. Crit. Halle, 433 (1822).
Mulgedium CASS. Dict, XXXIII, 296 (1826).
Galathenium NUTT. Trans. Phil. Soc. 2, VII, 442 (1841).
Agathyrsus DON, Edin. Phil. Journ. 310 (1828-29).
Melanoseris DECAISNE, Jacqm. Voy. Bot. 101 (1844).
Lactucopsis SCH. BIP. Vis. and Panc. Fl. Serb. II, 5 (1870).
Cephalorhyncus BOISS. Diag. Or. IV, 28 (1859).
Dubyaea DC. Prodr. VII, 247 (1838-39).
Steptoramphus BUNGE, Rel. Lehm. 205 (1851).
Mycelis and **Ixeris** CASS. Dict. XXIV, 49 (1826).
Chorisma DON, Edin. Phil. Jour. 308 (1828-29).
Chorisis DC. Prodr. VII, 177 (1838-39).

Baillon, *Hist. Pl.* VIII, 115; Benth. and Hook., *Gen. Pl.* II, 524: Durand, *Ind. Gen. Phan.* 235.

Living species: 75–100; Europe; Asia; Africa; N. America. Europe, 22; Russia, 17; Russian Europe, 10; N. America, 9; Canada, 7; S. Sts., 1; Rocky mts., 3; California, 1; E. Sts., 8; Pl. Wheel., 1; Pl. King, 1; W. Tex., 4.

Lactuca spicata (LAM.) HITCHCOCK, Fl. Ames 506 (1891).

Sonchus spicata LAM. Enc. Meth. III, 401 (1786).
S. floridanus AIT. Hort. Kew. III, 116 (1789).
S. biennis MOENCH, Meth. 545 (1794).
S. leucophaeus WILLD. Spec. III, 1520 (1803).
S. acuminatus BIGEL. Fl. Bost. 2 ed. 290 (1824).
S. pallidus TORR. Compend. 279 (1826).
S. multiflorus DESF. Cat. Par. (1829).
Agathyrsus leucophaeum BECK, Bot. 170 (1833).
Mulgedium leucophaeum DC. Prodr. VII, 249 (1838).
Lactuca leucophaeum GRAY, Proc. Am. Acad. XIX, 73 (1872).

Wats. and Coult., Gray's Man. 6 ed. 305; Britt., Fl. N. J. 154; Mac., Fl. Can. I, 281; Coult., Fl. Colo. 224; Chap., Fl. S. St. 253; Brew. and Wats., Fl. Calif. I, 442; Gray, Syn. Fl. I, 2, 444.

North America: Newf., Anticosti, N. Br., U. S., Q., Ont. to Brit. Col. and coast region; S. to Oregon and N. Calif.; E. to Minn., N. J., Iowa, Tenn. and N. Car.

Minn. valley: Forest district and W. to Cottonwood valley; low grounds near thickets or along streams.

HERB.: *Ballard 645*, Chaska; *Sheldon 1184*, New Ulm; *Sheldon 894*, Sleepy Eye; *Bailey 457*, Mud lake; *Roberts 71*, Stewart river; *Sandberg 860*, Red Wing; *Oestlund 105*, Minneapolis.

Lactuca floridana (LINN.) GAERTN. Fruct. II, 262 (1791).

Sonchus floridanus LINN. Spec. II, 795 (1753).
Mulgedium lyratum CASS. Dict. XXXIII, 297 (1826).
Mulgedium floridanum DC. Prodr. VII, 249 (1839).
Galathenium floridanum NUTT. Trans. Am. Phil. Soc. VII, 441 (1841).

Wats. and Coult., Gray's Man. 6 ed. 304; Britt., Fl. N. J. 154; Webb., Fl. Neb. 143; Mac., Fl. Can. I, 281; Upham, Fl. Minn. 91; Chap., Fl. S. St. 253; Cov., Fl. Ark. 199; Gray, Syn. Fl. I, 2, 443; Coult., Fl. Tex. 249.

North America: Detroit river and Minn. to N. J., Penn., Carolinas and Fla.; W. to Ills., Neb. and Ark.

Minn. valley: Reported from N. E. and E. edges; local or doubtful; borders of woods or thickets.

Lactuca pulchella (PURSH) DC. Prodr. VII, 134 (1838).

Sonchus pulchellus PURSH, Fl. Am. 502 (1814).
Lactuca integrifolia NUTT. Gen. II, (1818).
Sonchus sibiricus RICH. Hook. Fl. Bor.-Am. I, 293 (1833).
Mulgedium pulchellum T. and G. Fl. II, 497 (1841).
M. heterophyllum NUTT. Trans. Am. Phil. Soc. VII, 441 (1841).

Wats. and Coult., Gray's Man. 6 ed. 304; Webb., Fl. Neb. 143; Upham, Fl. Minn. 91; Brew. and Wats., Fl. Calif. I, 442; Coult., Fl. Colo. 223; Roth., Wheel. Exp. 182; Wats., King Exp. 208, 422; Gray, Syn. Fl. I, 2, 443.

North America: L. Huron throughout C. Can. to 66° N. lat., Mackenzie river reg. and Alaska; S. to N. Mex. and Calif.; E. to Neb., Minn. and Mich.

Minn. valley: Throughout; local or infrequent; prairies and edges of woods.

HERB.: *Sheldon 491*, Madison Lake; *Ballard 682*, Waconia; *Taylor 415*, Janesville; *Taylor 1040*, Glenwood; *Taylor 883*, Glenwood; *Sheldon 1274*, Lake Benton; *Juni 9*, Lake Carlos; *Bailey 4*, Vermilion lake.

Lactuca ludoviciana (NUTT.) DC. Prodr. VII, 141 (1838).

Sonchus ludovicianus NUTT. Gen. II, 125 (1818).
Galathenium ludovicianum NUTT. Trans. Am. Phil. Soc. VII, 433 (1841).

Wats. and Coult., Gray's Man. 6 ed. 304; Gray, Syn. Fl. I, 2, 443; Coult., Fl. Colo. 223; Webb., Fl. Neb. 143; Upham, Minn. Suppl. 86; Coult., Fl. Tex. 249.

North America: Minn. and Dak. to Iowa, Neb., Ark. and Tex.

Minn. valley: S. W. district; local?; thicket edges and borders of woods, or in openings.

HERB.: *Sheldon 894*, Sleepy Eye.

Lactuca hirsuta MUHL. Cat. (1813).

L. sanguinea BIGEL. Fl. Bost. 2 ed. 287 (1824).

L. sagittaefolia ELL. Sk. II, 253 (1824).

L. elongata var. *sanguinea* and *albiflora* T. and G. Fl. II, 496 (1841).

Galathenium sanguineum and *floridanum* NUTT. Trans. Am. Phil. Soc. VII, 443 (1841).

Lactuca canadensis GRAY, Man. 5 ed. (1867).

Wats. and Coult., Gray's Man. 6 ed. 304; Mac., Fl. Can. I, 280; Britt., Fl. N. J. 154; Upham, Fl. Minn. 91; Cov., Fl. Ark. 199; Gray, Syn.Fl. I, 2, 442; Coult., Fl. Tex. 249.

North America: Ont. to E. Mass., N. J. and La.; W. to Minn., Ark. and Tex.

Minn. valley: Forest and W. district; doubtless N. W.; borders of woods and thickets.

HERB.: *Sheldon 1304*, Lake Benton.

Lactuca canadensis LINN. Spec. 796 (1753).

L. caroliniana WALT. Fl. Car. 193 (1788).

L. longifolia MICHX. Fl. N. Am. II, 85 (1803).

L. elongata MUHL. Willd. Spec. III, 1523 (1803).

Sonchus pallidus WILLD. Spec. III, 1521 (1803).

Galathenium elongatum NUTT. Trans. Am. Phil. Soc. VII, 443 (1841).

Wats. and Coult., Gray's Man. 6 ed. 304; Britt.. Fl. N. J. 154; Webb., Fl. Neb. 143; Mac., Fl. Can. I, 280; Upham, Fl. Minn. 91; Cov., Fl. Ark. 199; Gray, Syn. Fl. I, 2, 442.

North America: Anticosti to Assiniboia and Saskatchewan; S. to N. Eng. and N. J. to Ga.; W. to Minn., Neb. and Ark.

Minn. valley: Throughout; borders of thickets and open places in woods.

HERB.: *Ballard 616*, Chaska; *Ballard 744*, Waconia; *Sheldon 1010*, Sleepy Eye; *Ballard 580*, Rice lake, Scott Co.; *Taylor 1021*, Glenwood; *Sheldon 1181*, New Ulm; *Bailey 196*, Vermilion lake; *Kassube 149*, Minneapolis; *Sandberg 359*, Cannon Falls.

TARAXACUM HALL. Stirp. Helv. I, 23 (1742).

Leontodon ADANS. Fam. II, 112 (1763).

Lasiopus DON, Sweet. Brit. Fl. Gard. 2, 346 (1836).

? **Caramanaca** TINEO, Pl. Rar. Sic. (1846).

Dens Leonis TOURN. Inst. 468 (1700).

Baillon, *Hist. Pl.* VIII, 110 (*sub Leontodon*); Benth. and Hook., *Gen. Pl.* II, 522; Durand, *Ind. Gen. Phan.* 235.

Living species: 40 described; 10 reduced; N. hemisphere and a few introduced or rarely indigenous in S. hemisphere. Russia, 14; Europe, 10; Russian Europe, 9; North America, 1–4; Pl. King, 3 descr.

Taraxacum taraxacum (LINN.) MACM. Torr. Bull. XIX, 1891).

Leontodon taraxacum LINN. Spec. (1753).
Taraxacum officinale WEBB. Prim. Fl. Holst. 56 (1780).
T. dens-leonis DESF. Fl. Atl. II, 228 (1800).

Wats. and Coult., Gray's Man. 6 ed. 303; Britt., Fl. N. J. 154; Upham, Fl. Minn. 91; Chap., Fl. S. St. 252; Coult., Fl. Colo. 222; Mac., Fl. Can. I, 279; Brew. and Wats., Fl. Calif. I, 439; Forbes and Hems., Fl. Sin. 478; Led., Fl. Ross. II, 812; Hook., Fl. Gt. Brit. 240; Nym., Fl. Eur.; Mac., Fl. Can. I, 558 *in var.*; Griseb., Fl. W. I; Herd., Fl. Eur. Russ. 78; Wats., King Exp. 206; Cov., Fl. Ark. 198; Gray, Syn. Fl. I, 2, 440; Hart., Fl. Scand. I, 58; Coult., Fl. Tex. 248.

All Europe and N. Asia to China and in temperate stations in S. hemisphere (probably adventive).

North America: Canada throughout, to Alaska, Baffins bay and Greenland; throughout U. S. and in Mex.; forms E. of Minn. are probably introduced from Europe.

Minn. valley: Throughout; fields, banks, roadsides and grassy places.

HERB.: *Taylor 82*, Elysian; *Taylor 184*, Janesville; *Sandberg 358*, Red Wing; *Kassube 148*, Minneapolis; *Hammond 23*, Lake City; *Herb. Sheld. 1791*, Minneapolis; *Herb. Wickersheim 88*, Idlewild, Lincoln Co.

NOTHOCALAIS GREENE, Bull. Acad. Calif. II, 54 (1886).

Troximon AUCT. *in part.*
Eutroximon GRAY, (Sect.) Syn. Fl. I, 2, 437 (1886) *p. p.*

North America: 4–5; California and Pac. coast region; 1 extending eastward.

Nothocalais cuspidatum (PURSH) GREENE, Bull. Calif. Acad. II, 54 (1886).

Troximon cuspidatum PURSH, Fl. Am. 472 (1814).
T. marginatum NUTT. Gen. II, 128 (1818).

Wats. and Coult., Gray's Man. 6 ed. 302; Mac., Fl. Can. I, 277; Upham, Fl. Minn. 89; Webb., Fl. Neb. 143; Coult., Fl. Colo. 221; Gray, Syn. Fl. I, 2, 437.

North America: N. W. T. to Dak. and Neb.; E. to Saskatchewan, Minn., Wisc. and Ill.

Minn. valley: Throughout; especially in prairie district; plains and hills or sunny banks.

HERB.: *Herrick 178*, Minneapolis; *Sandberg 352*, Welsh, Goodhue Co.; *Herb. Sheld. 1809*, Minneapolis; *Herb. Wickersheim 86*, Idlewild; *Herb. Moyer 156*, Montevideo.

AGOSERIS RAF. Fl. Lud. 58 (1817).

Macrorhyncus LESS. Syn. Comp. 139 (1832).

Ammogeton SCHRAD. Cat. Goett. 1 (1833).

Cryptopleura and **Stylopappus** NUTT. Trans. Phil. Soc. ser. 2, VII, 431 (1841).

Troximon AUCT. *in part.*

Baillon, *Hist. Pl.* VIII,110 (*sub Leontodon* Linn.); Benth. and Hook., *Gen. Pl.* II, 522; Durand, *Ind. Gen. Phan.* 234; O. Kuntze, *Rev. Gen.* I, 304.

Living species: 23± (Greene, *Pittonia* II, 176); N. America and Chile; all in western and Pac. coast regions.

Agoseris glauca (PURSH) GREENE, Pittonia II, 176 (1891).

Troximon glaucum PURSH, Fl. Am. 495, 505 (1814).

Macrorhyncus glaucus EAT. Bot. King Exp. 204 (1871).

Wats. and Coult., Gray's Man. 6 ed. 303; Mac., Fl. Can. I, 277; Upham, Fl. Minn. 89; Coult., Fl. Colo. 221; Brew. and Wats., Fl. Calif. I, 437; Gray, Syn. Fl. I, 2, 437.

North America: Man. and Saskatchewan to Pac.; S. in Sierras to Calif., Utah, Nev. and E. to Minn. and Neb.

Minn. valley: W. edge; infrequent; plains and high ridges or headlands.

HERB.: *Sheldon 1278*, Lake Benton.

ADOPOGON NECK. Elem. I, 55 (1790).

Krigia SCHREB. Gen. 532 (1791).

Cynthia DON, Edin. Phil. Journ. 309 (1828-29).

Luthera SCH. BIP. Linn. X, 275 (1836).

Baillon, *Hist. Pl.* VIII, 20 (*sub Cichorium*); Benth. and Hook., *Gen. Pl.* II, 507; O. Kuntze, *Rev. Gen.* I, 304; Durand, *Ind. Gen. Phan.* 232.

Living species: 4-5; N. America; S. Sts., 4; E. Sts., 3; Canada, 2; Rocky mts., 1; W. Tex., 3.

Adopogon virginicum (LINN.) OK. Rev. Gen. I, 304 (1891).

Tragopogon virginicum LINN. Spec. 789 (1753).

Hyoseris biflora WALT. Fl. Car. 194 (1788).

H. amplexicaulis MICHX. Fl. N. Am. II, 87 (1803).

H. prenanthoides WILLD. Spec. III, 1618 (1803).

Cynthia virginica DON, Edin. Phil. Jour. XII, 305 (1828–29).

Krigia amplexicaulis NUTT. Gen. II, 127 (1818).

C. amplexicaulis BECK, Bot. 168 (1833).

Cynthia griffithii NUTT. Jour. Acad. Phil. VII, 69 (1834).

Wats. and Coult., Gray's Man. 6 ed. 298; Britt., Fl. N. J. 152; Mac., Fl. Can. I, 273; Upham, Fl. Minn. 89; Coult., Fl. Colo. 215; Chap., Fl. S. St. 249; Cov., Fl. Ark. 198; Gray, Syn. Fl. I, 2, 412.

North America: Ont. to S. Man., Dak. and Colo.; S. to N. Y., N. J., Conn., Ga. and W. to Iowa, Minn. and Ark.

Minn. valley: Throughout, particularly in the prairie districts; grassy places or sunny banks.

HERB.: *Sheldon 626*, Wilton, Waseca Co.; *Sheldon 534*, Waseca; *Herrick 176*, Minneapolis; *Holzinger 133*, Winona Co.; *Herrick 177*, Minneapolis; *Kassube 145*, Minneapolis.

LYGODESMIA DON, Edin. Phil. Jour. 311 (1828–29).

Erythremia NUTT. Trans. Phil. Soc. 2, VII, 455 (1841).

Baillon, *Hist. Pl.* VIII, 113 (*sub Scorzonera*); Benth. and Hook., *Gen. Pl.* II, 530; Durand, *Ind. Gen. Phan.* 235.

Living species: 5–6; N. America; especially S. W. Rocky mts., 3; E. Tex. and Fla., 1; California, 2; S. Sts., 1; E. Sts., 1; Pl. King, 2; W. Tex., 3.

Lygodesmia juncea (PURSH) DON, Hook. Fl. Bor.-Am. I, 295 (1833).

Prenanthes juncea PURSH, Fl. Am. 498 (1814).

Wats. and Coult., Gray's Man. 6 ed. 302; Webb., Fl. Neb. 143; Coult., Fl. Colo. 220; Mac., Fl. Can. I, 283; Upham, Fl. Minn. 90; Brew. and Wats., Fl. Calif. I, 441; Wats., King Exp. 200; Gray, Syn. Fl. I, 2, 435; Coult., Fl. Tex. 248.

North America: Saskatchewan and Man. to Rockies, 49° N. lat.; S. to Wisc., Minn., Neb., N. Mex. and Nev.

Minn. valley: Throughout; sandy and waste places or on gravelly banks.

HERB.: *Sheldon 950*, Redwood Falls; *Sheldon 1014*, Sleepy Eye; *Sheldon 1510*, Lake Benton; *Sheldon 703*, Minneapolis; *Taylor 869*, Glenwood; *Ballard 255*, Jordan, Scott Co.; *Ballard 634*, Chaska; *Sandberg 357*, Vasa; *Herrick 182*, Minneapolis; *MacM.* and *Sheld. 48*, Brainerd; *Herb. Moyer 155*, Minnesota valley, near Montevideo.

PRENANTHES LINN. Gen. 609 (1737) *p. p.* BENTH. l. c. (1873).

Nabalus CASS. Dict. XXXIV, 94 (1836).

Harpalyce DON, Edin. Phil. Jour. (1828–29).

Esopon RAF. Fl. Lud. 146 (1817).

Baillon, *Hist. Pl.* VIII, 116 (*sub Lactuca*); Benth. and Hook., *Gen. Pl.* II, 527; Durand, *Ind. Gen. Phan.* 235.

Living species: 20±; S. Europe to India and Japan; Canary Isls.; N. America. Europe, 6; rest mostly American; S. Sts., 7; E. Sts., 9; Rocky mts., 2; Canada, 5; Russia, 4; Russian Europe, 1–2.

Prenanthes serpentaria PURSH, Fl. Am. 499 (1814).

? *Nabalus glaucus* RAF. Fl. Lud. 57 (1817).

N. fraseri and *trilobatus* DC. Prodr. VII, 242 (1837–1839).

Wats. and Coult., Gray's Man. 6 ed. 301; Britt., Fl. N. J. 155; Mac., Fl. Can. I, 282, 559; Upham, Fl. Minn. 90; Chap., Fl. S. St. 251; Gray, Syn. Fl. I, 2, 434.

North America: Newf., Anticosti, Q., Ont. to Minn.; S. to N. Eng., N. J. and Fla.

Minn. valley: Reported from N. E. and N. edges borders of woods and thickets, or shady banks.

Prenanthes alba LINN. Spec. (1753)

P. rubicunda WILLD. Spec. III, 2537 (1804).

P. suavis SALISB. Parad. Lond. 85 (1806–1807).

P. miamensis, *ovata* and *proteophylla* RIDD. Syn.W. Pl. (1835) *in part.*

Nabalus albus HOOK. Fl. Bor.-Am. II, 294 (1840).

Wats. and Coult., Gray's Man. 6 ed. 301; Britt., Fl. N. J. 155; Upham, Fl. Minn. 90; Chap., Fl. S. St. 250; Mac., Fl. Can. I, 282, 559; Cov., Fl. Ark. 199; Gray, Syn. Fl. I, 2, 434.

North America: Newf., Anticosti to Saskatchewan; S. to Ga., Ill. and Ark.

Minn. valley: Throughout; borders of thickets and on shaded river banks.

HERB. *Sheldon 1156,* New Ulm; *Taylor 1094,* Glenwood; *Taylor 1121,* Glenwood; *Herrick 179,* Minneapolis; *Winchell 11,* Richfield; *Herrick 180,* Minneapolis; *Bailey 481,* Agate bay; *Bailey 399,* Mud lake; *Kassube 147,* Minneapolis; *Herrick 181,* Minneapolis; *Sandberg 354,* Cannon Falls; *Herb. Sheld. 1812,* Minneapolis.

Prenanthes aspera MICHX. Fl. N. Am. II, 84 (1803).

P. illinoensis PERS. Syn. II, 366 (1807).

Chondrilla illinoensis POIR. Suppl. II, 331 (1811).

Nabalus illinoensis DC. Prodr. VII, 242 (1837-1839).

N. asper T. and G. Fl. II, 483 (1841).

Wats. and Coult., Gray's Man. 6 ed. 301; Upham, Fl. Minn. 90; Webb., Fl. Neb. 143; Gray, Syn. Fl. I, 2, 433; Cov., Fl. Ark. 199.

North America: Ohio to Minn., Iowa, Neb., Mo. and La.

Minn. valley: W. and N. W. districts; dry or sterile fields and prairies.

HERB.: *Taylor 1064,* Glenwood; *Sheldon 1349,* Verdi, Lincoln Co.; *Sheldon 1325,* Lake Benton; *Sheldon 1437,* Dakota line, near Elkton; *Sandberg 356,* Cannon Falls.

Prenanthes racemosa MICHX. Fl. N. Am. II, 84 (1803),

Nabalus racemosus DC. Prodr. VII, 242 (1837–1839).

Wats. and Coult., Gray's Man. 6 ed. 301; Britt., Fl. N. J. 155; Upham, Fl. Minn. 90; Mac., Fl. Can. 282, 559; Coult., Fl. Colo. 220; Gray, Syn. Fl. I, 2, 433.

North America: Anticosti, Newf., Q., Ont., Gt. lake reg. to Saskatchewan and 49° N. lat.; S. to N. Eng., N. J. and Penn.; W. to Minn., Colo. and Mo.

Minn. valley: Throughout, especially west; prairies and borders of sloughs.

HERB.: *Taylor 1065*, Alexandria; *Sheldon 1354½*, Verdi, Lincoln Co.; *Taylor 1148*, Glenwood; *Sheldon 1593*, Lake Benton; *Sheldon 1305*, Lake Benton; *Sandberg 355*, Red Wing; *Herb. Wickersheim 87*, Ash lake, Lincoln Co.

Prenanthes crepidinea MICHX. Fl. N. Am. II, 84 (1803).

Nabalus crepidineus DC. Prodr. VII, 241 (1837-1839).

Wats. and Coult., Gray's Man. 6 ed. 301; Upham, Fl. Minn. 90; Chap., Fl. S. St. 251; Gray, Syn. Fl. I, 2, 433.

North America: N. Y. to Penn. and Minn.; S. to S. Car. and Tenn.

Minn. valley: Reported from W. edge; rich, damp soil along streams or in prairie sloughs.

CREPIS LINN. Gen. 621 (1737).

Catonia and **Barkhausia** MOENCH, Meth. 535, 537 (1794).

Hostia MOENCH, Meth. Suppl. 221 (1802).

Lepicaune LAP. Pl. Pyren. 478 (1813).

Omalocline, Aethiorhiza, Paleya, Anisoderis, Nemauchenes, Gatyona, Brachyderea, Intybellia, Phaecasium CASS. Dict. XVIII, XXXIV, XXXIX, XXIII, XLVIII (1826).

Youngia CASS. Op. Phyt. III, 86 (1834).

Pterotheca CASS. Bull. Philom. (1816).

Sclerophyllum GAUD. Fl. Helv. V, 47 (1829).

Idianthes DESVX. Fl. Anjou, 199 (1827).

Calliopea and **Haplostephium** DON, N. Edin. Phil. Jour. 307, 309 (1828).

Soyeria, Aracium, Intybella MONN. Ess. Hier. 75 (1829).

Derouetia, Psammoseris, Cymboseris BOISS. Diagn. Or. 2, V, 114, XI, 52, 50 (1843).

Heteroseris BOISS. Fl. Or. III, 793 (1870).

Intybus FRIES, N. Fl. Suec. ed. 2, 244 (1828).

Geracium REICH. Moessl. Fl. Deutsch. (1834).

Anthochytrum REICH. Ic. Germ. XIX, 39 (——).

Crepinea REICH. Fl. Germ. Exc. 269 (1830).

Anisoramphus, Endoptera, Phalacroderis DC. Prodr. VII, 97, 178, 251 (1838).

Barkhausenia HOPPE, Flora 512 (1829).

Lagoseris, Borkhausia LINK, Enum. Berol. II, 289, 290 (1822).

Billotia SCH. BIP. Flora 707 (1859).

Vigineixia POM. N. Mat. Fl. Atl. 12 (1874).

Ceramiocephalum SCH. BIP. Bull. Soc. Bot. Fr. IX, 284 (——).

Crepidium TAUSCH. Flora 80 (1828).

Crepidium NUTT. Trans. Am. Phil. Soc. 2, VII, 435 (1841).
Psilocaenia NUTT. Trans. Am. Phil. Soc. 2, VII, 437 (1841).
Berinea BRIGN. Pl. Forojul. 50 (1810).
Trichocrepis VIS. St. Dalm. 19 (1826).
Rodigia SPRENG. Neu. Entd. I, 275 (1820) *part.*

Benth. and Hook., *Gen. Pl.* II, 513, 515, 516; Baillon, *Hist. Pl.* VIII, 108 (*sub Picris* Linn.); Durand, *Ind. Gen. Phan.* 233.

Living species: 160±; N. hemisphere; N. America, 9–10; center in Europe and Asia. In N. America, principally N. and W.

Crepis runcinata (JAMES) T. and G. Fl. II, (1841).

Hieracium runcinatum JAMES, Long Exp. I, 453 (1825).
Crepidium runcinatum NUTT. Trans. Am. Phil. Soc. VII, 436 (1841).
Crepis biennis var. *B.* HOOK. Fl. I, 297 (1833) *not Linn.*
C. biennis var. *americana* DC. Prodr. VII, 163 (1837).

Gray, Syn. Fl. I, 2, 431; Coult., Fl. Colo. 219; Mac., Fl. Can. I, 274; Brew. and Wats., Fl. Calif. I, 436; Upham, Suppl. Minn. 47.

North America: Saskatchewan to Minn., Mont., Colo. and California.

Minn. valley: W. to S. W. districts; infrequent; prairies and moist fields.

HERB.: *Huntington 14*, Rock Co.; *Wickersheim 131*, Idlewild, Lincoln Co.; *Moyer 244*, Montevideo.

HIERACIUM LINN. Gen. 620 (1737).

Pilosella SCH. BIP. Flora 417 (1862).
Schlagintweitia GRISEB. Comm. Hierac. 76 (——).
Chlorocrepis GRISEB. l. c. 75 (——).
Stenotheca MONN. Ess. Hierac. 71 (1829).
Mandonia SCH. BIP. Linn. XXXIII, 757 (1859).
Crepidospermum FRIES, Epic. Hierac. 153 (1848).
Heteropleura SCH. BIP. Flora. 434 (1862).
? **Apatanthus** VIV. Fl. Lib. Spec. 54 (——).
Andryala LINN. Gen. 915 (1737).
Forneum ADANS. Fam. II, 112 (1763).
Voightia ROTH, Roem. and Ust. Mag. IV, 17 (——).
Rothia SCHREB. Gen. 531 (1791).

Baillon, *Hist. Pl.* VIII, 109; Benth. and Hook., *Gen. Pl.* II, 516; Durand, *Ind. Gen. Phan.* 233.

Living species: 500 described; 200 reduced (B. and H.); Europe, 185; Russia, 50?; Russian Europe, 46; N. America, 25; Canada, 15; Rocky mts., 8; E. Sts., 7; S. Sts., 4; Calif., 5–6; Pl. King, 3; Pl. Wheel., 1; W. Tex., 2.

Hieracium longipilum TORR. Hook. Fl. Bor.-Am. I, 298 (1833).

H. barbatum NUTT. Journ. Phil. Acad. VII, 70 (1834).

Wats. and Coult., Gray's Man. 6 ed. 299; Webb., Fl. Neb. 143; Upham, Fl. Minn. 90; Mac., Fl. Can. I, 276; Cov., Fl. Ark. 198; Coult., Fl. Colo. 217; Gray, Syn. Fl. I, 2, 426 and Suppl. 455; Coult., Fl. Tex. 248.

North America: Ont. and Mich. to Minn., Neb. and Tex.

Minn valley: Forest district to Blue Earth Co.; rare; openings and damp meadow-land.

HERB.: *Sandberg 353,* Red Wing.

Hieracium venosum LINN. Spec. 800 (1753).

H. gronovii LINN. Spec. 802 (1753).
H. subnudum FROEL. DC. Prodr. VII, 218 (1837) *chiefly.*
Stenotheca venosa MONN. Ess. Hier. 72 (1829).

Wats. and Coult., Gray's Man. 6 ed. 299; Gray, Syn. Fl. I, 2, 425; Webb., Fl. Neb. 144; Britt., Fl. N. J. 153; Chap., Fl. S. St 250; Mac., Fl. Can. I, 276; Upham, Fl. Minn. 90.

North America: Ont. and N. J. to Saskatchewan, Minn. and Mont.; S. to Ga., Tenn., Neb. and Ark.

Minn. valley: Forest district; and N. W. district; infrequent; woods and plains.

HERB.: *Ballard 577,* Rice lake, Scott Co.; *Ballard 167,* Shakopee; *Ballard 259,* Jordan, Scott Co.; *Sandberg 607,* Red Wing; *Holzinger 296,* Winona Co.

Hieracium canadense MICHX. Fl. N. Am. II, 86 (1803).

H. virgatum, fasciculatum, macrophyllum PURSH, Fl. Am. 504 (1814).
H. scabriusculum SCHWEIN. Long's Exp. (1825).
H. kalmii SPRENG. Syst. III, 646 (1826).
H. prenanthoides HOOK. Fl. Bor.-Am. I, 300 (1833).
H. helianthifolium FROEL. DC. Prodr. VII, 198 (1838-1839).
H. corymbosum FRIES, Symb. Hier. 185 (1848).
H. auratum FRIES, Symb. Hier. 181 (1848).

Wats. and Coult., Gray's Man. 6 ed. 299; Britt., Fl. N. J. 153; Upham, Fl. Minn. 90; Mac., Fl. Can. I, 275; Coult., Fl. Colo. 217; Gray, Syn. Fl. I, 2, 425.

N. Europe.

North America: Greenland to S. Man.; N. S. to N. J.; N. Y., Penn.; W. to Mackenzie, Oregon and Brit. Col.; S. to Minn. and Colo.

Minn. valley: N. districts, and perhaps throughout forest district; dry woodland or thickets.

HERB.: *Holzinger 134,* Hancock; *Bailey 522,* Agate bay; *Kassube 146,* Minneapolis.

SUMMARY.

TOTAL NUMBER OF FAMILIES,	**106**
TOTAL NUMBER OF GENERA,	**407**
TOTAL NUMBER OF SPECIES AND VARIETIES,	**1174**

THE VALLEY OF THE MINNESOTA RIVER.

Location of the valley. The basin occupied by the Minnesota river and its various tributary streams is a tract of country approximately 16,600 square miles in extent, and lying between the 93d and 97th meridians west of Greenwich, and between 43° 20′ and 46° 20′ of north latitude. It comprises portions of the states of Minnesota, Iowa and South Dakota, but of its total area 15,706 square miles is within the borders of Minnesota. It includes in Iowa portions of Winnebago and Kossuth counties, and in South Dakota portions of Roberts, Grant, Deuel and Codington counties. In Minnesota it includes the whole of the counties of Swift, Lac Qui Parle, Chippewa, Yellow Medicine, Redwood, Brown, Watonwan, Nicollet and Blue Earth, together with larger or smaller areas in Big Stone, Stevens, Grant, Pope, Douglas, Otter-Tail, Kandiyohi, Renville, Sibley, Carver, Hennepin, Dakota, Rice, Le Sueur, Waseca, Steele, Freeborn, Faribault, Martin, Jackson, Cottonwood, Murray, Pipestone, Lyon and Lincoln counties. The general outline of the basin is that of a somewhat elongated and bent ellipse, the convexity facing southward, and its greatest diameter is in a direction northwest by southeast.

At Brown's Valley, between lake Traverse and Big Stone lake, is the divide between Hudson Bay and Gulf of Mexico drainage. Lake Traverse is one of the head lakes of the Red river of the North, the waters of which, by way of lake Winnipeg and the Nelson river, empty into Hudson Bay. In Itasca county, one hundred and fifteen miles northeast from the north west extension of the Minnesota valley, lies Bow-String lake, of which the waters drain into the Rainy river. Between Bow-String lake and the head waters of the Pomme de Terre and Chippewa rivers, tributaries of the Minnesota, lie the head waters of the Mississippi. On the southwest of the Minnesota valley, just over the divide in Lincoln county, the streams are tributary to the Missouri river. As an area of drainage, then, the valley of the Minnesota is one of central location. Its continental position is no less central. If the 50th meridian west of Greenwich be taken for the eastern boundary of the solid portion of the North American continent and the 140th meridian, passing near Mount St. Elias and cutting off the great Alaskan peninsula, for the western, the intermediate meridian will be the 95th west of Greenwich, and this meridian passes squarely through the valley of the Minnesota, cutting the counties of Jackson, Cottonwood, Brown, Redwood, Renville and Kandiyohi. Or if the meridian of 20° west be be taken for the eastern boundary of the North American continent, thus including the whole of Greenland, and the meridian of 170° west be taken for the western boundary, thus including the Alaskan peninsula and passing through Berings straits, the intermediate meridian as before is the 95th west. In like manner, if the parallel of 70° north latitude, passing near the mouth of the Mackenzie river, and the parallel of 20° north latitude passing near the city of Mexico be adopted as the northern and southern boundaries, respectively, of the solid portion of the North American continent. the intermediate parallel will be the 45th of north latitude and this passes through Hennepin, Kandiyohi, Chippewa and Lac Qui Parle counties of the valley in Minnesota, and through Grant and Codington counties in South Dakota. The same 45th parallel becomes the intermediate one if 80° north latitude be selected for the northern boundary and 10° north latitude for the southern. The 95th meridian and the 45th parallel intersect in Kandiyohi county just at the north edge of the valley.

The continental and hydrographic position of the Minnesota basin is seen to be peculiarly central and this adds much to the interest of determining the character of its plant inhabitants.

General topographical features. Big Stone lake which is the head lake of the main stream lies at an altitude of 962 feet above the sea. Into the northwestern part of this lake, near the town of Brown's Valley, the head stream enters after running for about twenty-two miles in a southeastern direction from the Coteau des Prairies of South Dakota. This head stream drains land that lies at an elevation of 2,000 feet above the sea level. The two principal tributaries from the north are the Pomme de Terre and the Chippewa rivers, both of which arise in the high morainic hills of southern Otter Tail county. Some of these hills reach an altitude of 1,750 feet above the level of the sea. Lake Stalker which is the head lake of the Pomme de Terre stands at a level of about 1,340 feet. The Leaf hills are in part drained towards the southwest by the Chippewa river and in part towards the northwest by the Red river of the North. Some of these hills reach the altitude given above, of 1,750 feet. On the other side of the Minnesota basin, more than one hundred and twenty-five miles to the southwest, lies the Coteau des Prairies, forming the southwestern boundary of the valley and reaching at different points an elevation of from 1,900 to 1,950 feet above the level of the sea. Lake Benton which is the head lake of the Redwood river lies at an elevation of 1,754 feet above the sea level. From these extremes of elevation northwestward, westward and southwestward, the basin inclines gently toward the east. At low water the mouth of the Minnesota river, where it discharges its waters into the Mississippi at Fort Snelling, lies at an altitude of 688 feet above sea level and the flood-plane at this point is 710 feet. In Hennepin county some of the lands drained by Nine Mile creek, which empties from the north into the Minnesota, near its mouth, lie at an altitude of about 1,000 feet, while just across the basin, in Dakota county, the southern edge attains in places an altitude of about 1,100 feet.

Character of the basin. The main stream of the basin—the Minnesota river—from the head of Big Stone lake to Fort Snelling, runs in a gorge varying in width from half a mile to four miles, and about 230 miles in length. The sides of this gorge rise, with slopes of from twenty to forty degrees, to from one hundred to two hundred and thirty feet above the level of the river, and to the general country level. The river itself is nowhere a large stream and except at a few points does not wash the bases of its bluffs, but flows in a trench through alluvial deposits. From the edges of this trench level country, diversified with many ponds, extends to the bases of the bluffs, broken in many places by exposures of gneissic and gabbroid rocks. Not far from the town of Morton, a notable diabasic dyke, 175 feet wide, cuts across the gorge. Besides this very large dyke there are upwards of twenty others in the region of the crystalline rocks. In general there are few exposures of rock below the town of Beaver Falls, but above this point the whole floor of the gorge is often broken for miles with the outcrops.

The average width of the Minnesota valley is not far from 100 miles. On the north it extends among the morainic hills of the belt which stretches from Lake Minnetonka to Otter

Tail county and sparingly into Dakota. On the south it is bounded by the high land of the Coteau des Prairies. The greater portion of the basin consists of rolling prairies intersected by numerous sluggish streams, but along the northern edge and in a considerable part of the far northwestern and the eastern and southeastern areas the basin includes the characteristic hills of a terminal or median moraine, and for the most part these hills are clothed with growths of hardwood timber. The Minnesota valley lies outside of the great lake belt of the state, which runs just north of its border, but a large number of lakes are found within its limits. These lakes are most abundant in the far northwestern, eastern and southeastern portions of the basin and are least abundant in the western, central western and southwestern portions.

Distribution of forest and prairie. The streams of the basin are generally wooded along their courses and the great gorge of the river is heavily timbered as far up as Montevideo. The northern bluffs are much more sparsely clothed with forest than the southern and for long distances between Mankato and Montevideo are either altogether bare of timber or but scantily covered in comparison with the bluffs across the river. The headwater regions of the Pomme de Terre and Chippewa rivers are wooded and the northern edge of the basin shows frequent incursions of the northern forest belt. The only coniferous tree which reaches the valley is the larch or tamarack—*Larix americana*—and only a few of the characteristic tamarack swamps occur in the valley. The northeastern and eastern portions of the valley are within the limits of the hardwood forest. Such portions of the basin as lie in the counties of Hennepin, Carver, Scott, Rice, Le Sueur and Sibley are for the most part timbered and a part of the area in Blue Earth, Waseca and Nicollet counties belongs to the same forest belt. This belt extends somewhat more than ten miles southwest of Mankato and up the Le Sueur river beyond Waseca. It gradually fades out into the prairie regions south and west.

Such being the general distribution of forest and prairie it is apparent that the various intermediate conditions will prevail along the demarcation lines between the two main plant physiognomic formations. Meadows, marshes, swamps and bogs are not infrequent, being especially abundant in the bottomland of the main stream in that portion lying between Mankato and Fort Snelling. In the prairies of the valley sloughs, marshes and occasional swamps break the general monotony. In spite of the preponderance of the rolling prairie the diversity of conditions in the valley as a whole permits it to maintain a fairly diversified flora.

Soils. In view of the lack of any systematic analyses of soils in the Minnesota valley it is possible to speak only in general terms of the various conditions that may be discovered. Practically the whole of the valley is covered with glacial drift and this consists of a mixture of sand, gravel, clays and boulders. Cretaceous clay is the most abundant component of the soil. This matrix is covered over with a mantle of black soil, resulting from the decay of unnumbered generations of plants, and from six inches to three feet in thickness. Throughout the bottomland of the main gorge the general thickness and fertility of the soil is most noteworthy. In the region of metamorphic rocks above Fort Ridgely this thickness diminishes in places, but to the head of the gorge areas of maximum thickness may be discovered. On the rolling prairies the soil is scarcely different in general character, so far as concerns the growth of plants. The matrix is for the most part of unmodified drift, while in the main gorge and at other points, the substratum often consists of modified or stratified drift. Boulders are very rare in the basin of the Minnesota, their area of frequency being confined to the northern and morainic portions. The clays are of the ordinary sort found in Minnesota glacial till. Blue and red clays are predominant. In some portions of the valley saline and alkaline soils are found, but such areas are small and are confined for the most part to the western and southwestern areas. No characteristic saline or alkaline marsh occurs in the valley, although several in which the water is somewhat brackish have been noted. The saline or alkaline areas are commonly marked enough to favor the development of characteristic plants, such as various *Chenopodiaceæ* and *Polygonaceæ*.

The soils are classified by N. H. Winchell into seven groups as follows: (1) Red till soil; (2) gray till soil, timbered; (3) gray till soil, prairie; (4) loam with gravelly subsoil; (5) laminated clay soil and subsoil; (6) sandy soil with sand or fine gravel as subsoil; (7) alluvium. This is a geological classification, but may serve in the absence of any based on other characters. From a chemical point of view the data are not at hand to make the classification which would be the most useful to the botanist. Of the groups of soils named above the gray till soil is the most prominent in the Minnesota valley and occurs in both prairie and forest region. It is somewhat more fertile than the red till and second as a subsoil only to the alluvium. The fertility of any soil is, however, secondary so far as concerns the subsoil and it is to the layer of loam which covers the till that the productive qualities must largely be referred. The loam varies in its per cents. of nitrogenous substance, but in general maintains a high average.

Climate. Owing to the short time during which meteorological observations have been made in the valley of the Minnesota it is not possible to get all the data that are desirable for an explanation of its climate. From the statistics compiled for the Smithsonian Institution, by Schott, I am able to present the following table of mean annual and seasonal precipitation at certain points of interest.

TABLE OF PRECIPITATION.

In this table the figures are means arranged from observations extending over various periods. The precipitation is given in inches and fractions.

	LAT.	LONG.	ELEV.	SP'NG	SUM.	AUT.	WINT	YEAR.	EXTENT OF OBSER'N
Ft. Ridgely.............	44°.30′	94°.45′	1230	6.48	9.11	5.86	4.02	25.47	13 years
Ft. Snelling	44°.53′	93°.10′	820	6.20	10.14	6.40	2.57	25.31	38 years
Lac Qui Parle......... ..	45°.00′	95°.30′	946	7.78	11.84	6.47	2.98	29.07	5 years
New Ulm.......	44°.00′	94°.30′	1007	6.55	11.38	5.49	2.53	25.95	10 years
Madelia..................	44°.19′	94°.30′	821	7.41	9.87	7.39	4.21	28.88	2 years
St. Paul..................	44°.58′	93°.03′	693	7.81	12.14	7.09	3.01	30.05	17 years

At Ft. Snelling the maximum annual precipitation during the period was in 1849 when 49.69 inches of water was precipitated. The minimum was in 1852 when 15.07 inches was precipitated. The observations extend from 1837 to 1874.

At St. Paul the maximum was in 1865 when 38.14 inches fell. The minimum was in 1864 when 14.86 inches fell.

The mean yearly precipitation, as indicated upon the isohyetal maps prepared by Schott, varies in the Minnesota valley from 20 to 32 inches. It is greatest in the region around Ft. Snelling and least in the high land of the western boundary.

For the spring, summer and autumn the mean precipitation in the delta region of the Mississippi is respectively 18 inches, and for the same region the winter precipitation is 16 inches, making a total mean precipitation of 70 inches.

Through the kindness of Director Harmon of the Minnesota Weather Service, I have been able to compile from records preserved on file in his office at Minneapolis the following tables of precipitation and temperature of three important points in the valley of the Minnesota. St. Paul is near the mouth of the main stream. Mankato is in the southern central region. Morris is in the northwestern region. Thus the points are fairly illustrative. The figures represent averages of monthly means and summations of averages for the average yearly mean. The period covered by the observations is six years.

TABLE OF PRECIPITATION.

1886-1891.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Morris	.35	.38	.81	1.55	1.81	4.00	4.12	2.43	2.58	1.09	.38	1.03	20 53
St. Paul...	1.13	.64	.93	2.76	2.50	3.25	2.98	3.22	2.29	1.29	.90	1.31	23.20
Mankato..	1.46	1.05	1.16	2.80	2.94	2.74	2.91	1.87	2.23	1.06	1.00	1.82	23.04

Morris: lat. 45° 30′; long. 95° 58′; alt. 1,129 feet.
St. Paul: lat. 44° 58′; long. 93° 03′; alt. 693 feet.
Mankato: lat. 44° 06′; long. 94° 01′; alt. 791 feet.

TABLE OF TEMPERATURE.

1886-1891.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Morris	6.91	7.03	22.76	44.76	55.23	66.58	69.93	66.36	58.16	44.18	27.0	16.75	40.47
St. Paul...	10.85	12.68	25.48	46.22	56 45	66.96	71.28	67:38	58.98	46.25	29.91	21.55	42.83
Mankato..	11 52	14.75	27.61	48.28	56.00	68.47	72.12	67.40	59.88	47.15	31.66	23.71	44.12

From these tables it is seen that the range of temperature is somewhat higher in the eastern than in the western portion of the valley and somewhat higher, too, in the southern than in the northern. The precipitation is greater in the northeastern corner than elsewhere. This is, however, the principal position of the forest area of the valley. It is probable that forest and rainfall have a reciprocal influence upon each other.

So far as the data of prevailing winds have been examined it is impossible to make any valuable generalisations from them except that the shape of the valley produces some diversions in different portions. What these diversions are or what law governs them, I am unable to say.

Average cloudiness is unfortunately not a matter of record to such an extent that anything can be done with it.

The climate is a characteristic inland North American one. The rainfall has its source almost entirely in the Gulf of Mexico vapors which extend up the Mississippi valley, precipitating themselves in less and less amount as they pass from the mouth of the Minnesota river to its headwaters. A summer maximum of precipitation is conspicuous. The temperature is, of course, less than that of points on the same parallels in the old world, such as Marseilles, Florence or Odessa. It presents conspicuous summer maxima and winter minima.—40° Fahr. is reached occasionally during the months of January or February, and—30° Fahr. frequently. In the summer, 95° Fahr. is reached occasionally and 90° Fahr. during almost every summer. The variations are more excessive in the western and prairie regions than in the eastern and forest regions, where the range of maxima and minima is least. The sheltering effects of the forest, the lower altitude, and possibly the smaller width of the valley, by interfering with cold or hot winds, have much to do with this difference. The snow-fall is greatest in the northwestern portion. The first frosts usually occur near the middle of September, and the ice breaks up in the streams late in March or early in April.

Phaenological observations. No reliable phaenological observations have been made in the valley of the Minnesota. In general, as elsewhere in the northern hemisphere, the plants of the northern range are first to flower, and those of most southern range last. The time of flowering of any species is a useful indication of its history, and observations along this line are much needed. The first shrub to put forth leaves is usually *Artemisia dracunculoides*, the first trees to flower, the various species of *Salix*. In the autumn a characteristic composite-flowering is seen in the golden-rods, asters and sunflowers of both prairie and forest region. The mid-summer season finds the prairies gay with the purple of *Laciniaria* and *Astragalus* or *Spiesia*. The oaks are usually among the last trees to drop their leaves, and the cottonwoods among the first. Among herbaceous plants chlorophyll persists the longest in the grasses.

Geological history of the Minnesota valley. The Minnesota river of today occupies an ancient gorge which was evidently formed previous to the Cretaceous period, for Cretaceous clays are found in eroded hollows of the Shakopee limestone in Le Sueur, Nicollet and Blue Earth counties and Cretaceous sandstones, clays and shales in the Cottonwood and

Redwood valley districts, and near Fort Ridgely. This indicates that some ancient stream had cut a gorge in the Lower Magnesian rocks and had drained northern Minnesota into the great Cretaceous Mediteranean. Since no Tertiary deposits are found in Minnesota it may be concluded that they, with most of the Cretaceous strata, were torn up by the ice-sheet of the first glacial epoch. In this way the ancient gorge was filled with debris and while this does not consist altogether of unmodified drift, it is in some part of such nature. The presence of beds of sand and gravel deep in the till indicates that streams must have carried on their work during the subsidiary interglacial epochs and doubtless vegetation re-established itself during some or all of these interglacial periods, for vegetable debris is found in the lower forest beds of the till. By this ploughing up before the first great ice-sheet of the Quaternary age, the Cretaceous deposits and the Tertiary, if any existed, were mingled together into a layer of till from 265 feet thick, in places, down to somewhat less than a hundred, on higher levels. This layer of till persists over most of the Minnesota valley to the present time. During the epoch of the deposition of this first layer of till the ice-sheet extended south to Cincinnati and northern Kentucky, and into Missouri. Almost the whole of Minnesota was covered by it. As recession began, exposing the surface of the country once more, the melting ice and snow sought out the gorge of the Minnesota and it served as a drainage-trough for vast quantities of water. In this epoch it was the outlet channel of a large glacial lake which occupied the valley of the Red river and must have been somewhat similar in extent and character to the later glacial lake Agassiz. During this period excavation of the till which had filled the gorge was carried on and doubtless a large river occupied the present bed of the Minnesota.

Later a second principal encroachment of the ice began and extended south to Des Moines, Iowa. During its recession it piled up the Leaf hills moraine which bounds the Minnesota valley on the north. As the ice retreated from the morainic area the valleys of the Red and Saskatchewan were occupied by the glacial lake Agassiz and from the southern boundary of the lake its waters were drained through lake Traverse, Brown's Valley and Big Stone lake along the present gorge of the Minnesota river. Under the erosive energy of this large stream, which filled the gorge from bluff to bluff, much of the glacial till of both epochs was washed away thus exposing the older crystalline rocks of the upper region as they are now seen protruding from the floor of the valley. In this region of the crystalline rocks it is easy to imagine how turbulent must have been the river Warren, as Upham has named it, in its flow. When the ice finally retreated beyond Hudson Bay the drainage of the lake Agassiz region set towards the north, as it remains to the present. A divide appeared in the old gorge of the river Warren and the extreme upper portion now occupied by lake Traverse served as a head lake for the northern trending waters, while the great extent, from the head of Big Stone lake to the mouth of the present river, was used by a much diminished stream, the Minnesota river of modern times.

During both the first and second post-glacial periods, when the Minnesota gorge was draining to the sea large bodies of fresh water which had resulted from the melting ice, it was eroded to a much greater depth than to-day. The gorge of modern times is about one-half filled with the more or less modified till of the two epochs and the alluvial deposits of the interglacial and final post-glacial periods. At Belle Plaine, for example, as reported by A. Winchell, in a well dug on the bottom-lands of the gorge the rock was found 170 feet below the present surface of the river. This indicates, then, an erosive action having made itself felt at almost four hundred feet below the present general country surface. The river Warren, after its waters had ceased to carry and deposit modified drift became, as Upham has shown, "a powerful eroding agent," and doubtless at this period the gorge was cut to its greatest depth. Since the diminution of the stream owing to the disappearance of lake Agassiz, the tributaries have brought in considerable silt and by the deposition of this silt by the different streams the gorge has come again to be partly filled with alluvium. The Lac Qui Parle river has thrown a dam of sediment across the channel of the present Minnesota and this has formed the back-water lake known as Lac Qui Parle. The sluggishness of the Minnesota at its mouth, and for thirty miles up stream, is in a like manner due to the sediment thrown across its mouth by the Mississippi.

In Blue Earth county a smaller glacial lake existed which drained into the Des Moines river by Union slough, and perhaps also, at other times, into the river Warren by way of the Blue Earth river gorge. Whether the river Warren at any time flowed through the old Blue Earth lake is doubtful. Rather is it probable that the lake was formed earlier than lake Agassiz and was bounded like lake Agassiz by the northern ice sheet.

Since the final recession of the ice from the valley of the Minnesota fluvial action has been going on, building up meadow land. Many of the lakes left by the glacial period have either filled or have become much restricted in size. The successive generations of plants which have lived and decayed upon the surface of the country have contributed to the soil and this in varying extent has been redistributed by the action of water and, very slightly, by the winds. The prairie has been steadily encroaching on the forest and probably the forest of today is much more limited in its extent over the valley than formerly. Under the general forces at work, then, the valley as it is seen to-day is the product of a long evolution and it has reached its present characters of topography, as of climate, geography, plant and animal population, by the constant interworking of definite and, to some extent, calculable forces. The impressive history of the river valley is, however, to be matched with the equally impressive story of the varying fortunes and the long struggle of its plant-inhabitants with each other, and of the general conditions under which and through which they have come to present the characters, distribution, prevalency and habits that are to be discovered in them by the study of the modern flora.

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RELATIONSHIPS OF THE METASPERMIC FLORA OF THE MINNESOTA VALLEY.

Statement of the problems. As has been explained above, the evidence is conclusive that within times geologically recent the valley of the Minnesota was encroached upon by a continental glacier which doubtless destroyed all the metaspermic plants that had previously established themselves within the borders of the basin. To-day, as indicated in the list preceding, 1,174 species and varieties of metaspermic plants are known to exist where previously there were none. This impressive fact at once suggests a multitude of questions: How did the present plant inhabitants enter the Minnesota valley? In what order did they enter? Which are the old settlers and which the comparatively recent immigrants? What relation does this modern plant-population bear to the more ancient one which was overwhelmed by the glacial detritus piled 250 feet thick over the old level of the country? How is it that some kinds of plants are established more abundantly than others? What has determined the various habitats of the different species? Why are the individuals more numerous in some species than in others? How long did the immigration take? Along what routes did the incoming plants travel? What relation does the present metaspermic flora bear to those of adjacent or more distant regions? Under what laws did the repopulation of the valley progress? Does this immigration still continue? What is the trend of evidence derived from the present and from the past concerning the future movements of plant-population in the valley of the Minnesota? These are but illustrative of the problems that press for solution when the plants of any natural region are given systematic study. To answer some of them is the purpose of these pages.

The dynamic inter-relations of plants. It is necessary first of all to call attention to a fact well known but not universally apprehended. The plant-population of the globe is nowhere in a static condition but is always undergoing flux and modification. This shifting about of plants is recognised at once in those cases where the agency of man has intervened. The presence of the harmful foreign weed is heralded, and measures are taken to prevent its securing a foothold, for it is understood that if it be a plant of robust habit it will conquer for itself an abiding place at the expense of other weaker plants with which it may come in contact during its struggle for existence. Every individual plant must make its way in the world. It must either win new territory, maintain what it has already won, or cede its place of abode and growth to some plant better fitted to cope with the conditions peculiar to that particular spot. It thus happens that the flora of any region—that is to say the plant-society of the region—is in the same condition of mutual interdependence and mutual competition that we discover in human society. Complex inter-relations of individual with individual, species with species, formation with formation arise and the plant-population of any area so far from being stable in its composition is in a continual state of battle for soil, light, moisture, heat and useful alliances, both in the physical and biological sense of the word. Thus, in a forest, the pine-trees compete with each other for light, each taller one than the rest gaining a distinct advantage; hard-wood timber antagonises the coniferous and along the forest skirmish-line will be found slowly working its way up the streams, gradually isolating the coniferous trees into separate groves, ready at the first sign of misfortune or weakness in the opposing species to seize and occupy its territory. Again forest and prairie—the two most notable plant formations of the Minnesota valley—each tenanted by hundreds of species characteristic if not peculiar—carry on a silent warfare with each other and as the chance of battle swings in the favor of the one, the other is imperceptibly but surely driven back.

It happens then, to return to the illustration, that we find plants organised much as is human society. The individuals of each species compete with each other for favorable habitats and for the optimum of growth-materials and energising forces. Each species competes with those around it and in this competion the individuals might be said to stand shoulder to shoulder against the common foe, as may be seen in the united efforts of a human tribe or nation against some warring body. And again groups of species, having perhaps a common line of movement or a common need to be supplied, band themselves together and find arrayed against them other united groups of species competing for the same necessity or striving to move in the opposite direction.

By the assistance of this fact of organised and stratified competition in the realm of plant society the dynamic relations of plants to one another are, in general, to be explained. We no longer permit ourselves to look at a grove standing in the midst of the prairie as stable or even as quiescent, but we picture to ourselves the complex condition of strain which exists in varying degree and under different degrees of organisation, between the different plants, species and groups of species. Such a dynamic condition should perhaps be recognised in terminology more than it is and instead of speaking of the northern group of plants one should name such a floral element the *south-bound* group and instead of calling by the name of "southern" those plants which occupy a southern range one should refer to them as *north-bound.* For certainly the exigency of existence is such for every creature that it welcomes an expansion of opportunity for development. Room for growth is an important factor of such an opportunity, and for the plant already established in high northern latitudes this room for growth is to be found only by a southward extension.

General features of plant-distribution. The total number of flowering-plant species at present occupying the crust of the earth is estimated by De Candolle to be in the vicinity of 250,000. The mean area of each species is about $\frac{1}{150}$ of the surface of the globe or 45,500 square leagues. Of this number the valley of the Minnesota with its 16,600 square miles of country contains 1,174 species or about $\frac{1}{222}$ of the whole number. The relationships of this flora can be understood only after a general survey of the distribution of plants over the whole earth.

If one should follow any parallel of latitude that might be selected until he returns to his starting point he would pass through regions characterised by diversities of plant-population. As he crossed rivers, mountain ranges and oceans, the familiar plants of one region would become fewer in the adjacent region and very likely disappear. When half way around the earth from the point of departure our hypothetical traveler would find himself in a floral region distinctly different from the one of his starting point. This difference would in general increase in amount and distinctness inversely with the height of the latitude. At the equator or near it the difference would be great, while on the parallel of 70° N. lat. or 70° S lat. the differences both in amount and distinctness would be less. The increase in differences as the latitude decreased would, however, be proportional to the increase in the length of the parallels, so that, in point of position by longitude, the differences in plant groups, species and formations vary directly with the distances they are from each other. In this case, thus generally stated, the differences in elevation, trend of isotherms, direction of prevailing winds, etc., which might be found on the same parallel of latitude, are disregarded in order to simplify the statement. Such differences would have only a modifying, not a fundamental effect on the facts of distribution.

But if the traveler selected some meridian for the line of his journey around the earth, the changes in the plant-inhabitants as he passed from region to region would be greater in amount and very much more conspicuous than in the former case where a parallel of latitude was selected. In circling the northern hemisphere one may, at a moderate degree of latitude, pursue almost the entire journey in a coniferous forest over the land areas, and in a region of distinctive fucoid and red algae over the water areas of the journey. No such uniformity of floral aspect would be maintained if a meridian be selected. From the sphagnum and tundra region of the pole, one would pass into coniferous forest, hardwood forest, evergreen tropical forest, and into the deserts, savannahs and virgin forest of the equatorial region. Then in inverse order the same changing panorama with, however, an almost entirely new series of forms would unfold itself as the traveler neared the opposite pole. In the course of his journey he would find that the greatest differences of all are those that exist between the plant-inhabitants of the north temperate and south temperate regions. The difference between the United States and the Argentine Republic is far more conspicuous than the difference between the United States and Siberia or Europe. And in like manner the difference between Asia and Australia is greater than that between Australia and the Cape of Good Hope or Chile.

In general, in either the northern or the southern hemisphere, in point of position by latitude, the differences in plant groups, species or formations varies directly with the differences in humidity. As the equator is approached the average annual precipitation progressively increases over most of the surface of the earth. This is due either directly or indirectly to the progressive increase of temperature. While this suffices to explain the differences between two more or less distant points on a meridian in either the northern or southern hemisphere it does not explain the fact of the greatest average difference that exists between north temperate and south temperate regions. To form an explanation of this, further examination is necessary.

The equatorial or tropical regions of the earth, since in point of humidity and temperature they present the most favorable conditions for plant-growth, are crowded with a luxuriant vegetation. This crowding of the favorable region might be likened to the congestion by men of a rich gold-field where the opportunity of acquiring wealth is most favorable. Under such conditions the struggle for existence becomes most bitter and, as in countries overcrowded with humanity, an escape is made, when practicable, by emigration. The equatorial region, then, is a perennial fountain-head from which there is a constant stream of emigration into northern and southern latitudes. With such migration there must, under the stress of natural selection, originate and develop modifications in the migrating forms, which in course of time arise to specific rank. What these modifications may be in any particular case depends upon the complicated intermingling of the various particular conditions of climate, nutrition and competition. Further it happens that cyclical changes in the mean temperature of polar or subpolar regions have, at different times, initiated glacial epochs of longer or shorter duration. In the northern hemisphere the glaciers have extended south in Asia to the Himalaya mountains and in North America at least to latitude 39°, in Missouri. The effect of secular ice invasions upon a highly developed plant-population, could not be other than disastrous. Before the advancing glacier there must have been, among plants as among animals, a stern race for lower latitude and more congenial temperature. In this way periodic returns to the equatorial belt have been characteristic, in a general manner, of plant migration-phenomena. Evidently, under the competition and struggle of the return, natural selection would operate as before in the development of new characters and the emergence of so-called new species.

From the outline above it is apparent that a third and biological factor must be added to the two already given, if one is to explain the differences between two regions supporting distinct plant-populations. This factor, since it includes the element of time, might be called the time-factor, or better, simply "history."

The general factors in floral differences. These are, as indicated, three in number. In order of their importance they are *history*, *humidity*, *distance*. The third is geographical, the second geographical and cosmical, the first biological. The first is the most complex, upon analysis; the third is least complex. It is apparent, then, that if the explanation of such a series of phenomena as is presented by the plant-population of a natural district like the valley of the Minnesota is to be attempted, it must be through a knowledge of geographical, climatological and biological conditions. Not only present conditions but past conditions must be comprehended in such an explanation. The knowledge of past geography, past climatology and past biologic phenomena is as essential as the knowledge of these factors as they exist today. Geographical distribution of plants is therefore based upon geology as well well as upon topography, upon development as well as upon classification, upon embryology as well as upon anatomy. It is a study in evolution no less than in systematics. Thus the difficulty of the problems pressing for solution is seen to be greater as they come to be comprehended. The position of an individual plant in one locality rather than in another becomes a matter for historic study, and such is the interdependence of all portions of the universe that the final explanation of what is apparently a single and simple phenomenon is after all an explanation of phenomena in the highest degree multiple and complex. In the scientific, as in the poetic sense, a knowledge of the violet is, at the same time, a knowledge of everything else.

In the present stages of our knowledge it is apparent that final explanations are remote and that inquiry must pause before its limitations. Partial answers are all that may be offered by partial information.

In naming the three factors of floral differences it will be observed that no classification of the methods by which these differences arose is attempted. Indeed examination a little more intimately will show that the three factors may be resolved into terms of the first. Distance and humidity, in their relations to the plant-population of the globe, become biological in their significance, and the distances and climate of to-day, considered quite apart from vegetation, are themselves phenomena of evolution. The geological history of the earth has had much to do with determining its topography, geography and climate. Therefore the problems of plant distribution become in their final analyses, like other problems of biology, studies in evolution. The understanding of relationships is prior to the understanding of juxtapositions, separations or isolations of species, individuals, families or formations. The knowledge of embryology, phylogeny, comparative anatomy, classification, help to a knowledge of relationship. By the study of buried plants, fossil in the rocks of former ages, by the intimate observation of developmental stages in the plants of to-day, by the systematic examination and enlightened arrangement of all forms of plants and animals living within the range of human observation, and by the critical comparison of results in each of these three departments of scientific botany, lies the method of reconstructing the past history of vegetation. Such a reconstruction must perforce be general in its character, tentative in its statement of details. Nevertheless there are some conclusions that present themselves and these will be discussed in their proper place.

NATURAL VEGETATION REGIONS OF THE EARTH.

Grisebach: Under the notions of separate centers of development the most important classification of the land areas of the globe into vegetation-regions is that of Grisebach. By this writer twenty four regions are recognised, as follows:

I. Arctic region.
II. Forest region of the Eastern Continent.
III. Mediterranean region.
IV. Region of the Asiatic Steppes.
V. Chinese-Japanese region.
VI. Indian-Malayan region.
VII. Sahara region.
VIII. Soudan, or Central African region.
IX. Kalahari region.
X. Cape of Good Hope region.
XI. Australian region.
XII. Forest region of the Western Continent.
XIII. Prairie region.
XIV. Californian Coast region.
XV. Mexican region.
XVI. West Indies region.
XVII. Cisequatorial South American region.
XVIII. Hylaea, or Amazonian region.
XIX. Brazilian region.
XX. Tropical Andes region.
XXI. Pampas region.
XXII. Chilean transition region.
XXIII. Antarctic forest region.
XXIV. Oceanic Island region.

Engler: Under the notions of general development and migration the most important classification is that of Engler. By this writer the surface of the globe is divided into four principal realms *(Florenreichen)*, each of these into regions and each region into provinces. The realms and regions are as follows:

A. Northern Extra-Tropical Realm.
    (1) Arctic region.
    (2) Sub-Arctic, or Conifer region.

- (3) Middle Europe and Aral-Caspian region.
- (4) Central Asian region.
- (5) Macaronian transition region.
- (6) Mediterranean region.
- (7) Manchurian-Japanese region.
- (8) Pacific North American region.
- (9) Atlantic North American region.

B. Tropical Old World Realm.

- (1) West African forest region.
- (2) African-Arabian steppe region.
- (3) Malagassian region (Madagascar, Mascarenes, Seychelles).
- (4) Lower Indian region.
- (5) Tropical Himalaya region.
- (6) East Asian tropical region.
- (7) Malayan region.
- (8) Araucaria region (tropical East Australia, New Caledonia, northern New Zealand, Kermadec and Chatham Isles).
- (9) Polynesian region.
- (10) Sandwich Island region.

C. South American Realm.

- (1) Mexican highland region.
- (2) Tropical American region.
- (3) Andes region.
- (4) Galapagos region.
- (5) Juan-Fernandez region.

D. Old Oceanic Realm (dominant plants of more ancient types than elsewhere).

- (1) Antarctic forest region of South America.
- (2) New Zealand region.
- (3) Australian region.
- (4) Kerguelen region.
- (5) Amsterdam Island region.
- (6) Cape of Good Hope region.
- (7) Tristan d'Acunha region.
- (8) St. Helena region.

The regions of the North American continent come under two realms, as is noted above. Mexican highlands and Central America botanically belong rather with South than with North America. In the regions which are placed under the northern extratropical realm, and contain North American areas, the following divisions into provinces are established:

(1) Sub-Arctic, or Conifer region.

- (*a*) Northern European province.
- (*b*) Northern Siberian province.
- (*c*) North American Lake province. (Described as sub-arctic and alpine, uniting on the north with the Arctic region and on the south with the Pacific and Atlantic regions of North America. Three zones are recognised—I, the *Algonquin zone*, lying between Hudson Bay, Newfoundland and Lake Superior, characterised by *Thuja occidentalis* and *Taxus canadensis;* II, *Athabasca zone*, bounded on the south by a line from

Hudson Bay to the Rocky mountains and characterised by *Pinus banksana*, *Abies balsamea*, *Picea nigra*, *Larix pendula*, *Picea alba*; III, *Canadian zone*, not clearly delimited, lying southward of the other two and between them, including Manitoba, western Ontario, northern Minnesota, Wisconsin and Michigan, characterised by *Pinus strobus*, *Pinus resinosa and Abies canadensis*.)

(2) Pacific North American Region. (Reaching from the sea to the foot of the Rocky mountains, and south to the Mexican highlands.)

(*a*) Californian coast province, between the Coast Range and the sea. Characteristic conifers, *Sequoia sempervirens*, *Pinus insignis*, *Pinus muricata*, *Pinus tuberculata*, *Pinus coulteri*, *Picea bracteata*, *Torreya californica*, *Cupressus macnabiana*, *Cupressus macrocarpa*.

(*b*) Oregon province. (Including area west of Cascade mountains. Four zones are recognised; I, *Kaloschen zone*, to 52° north latitude, characterised by *Thujopsis borealis;* II, *Douglas zone*, to 43° north latitude, characterised by *Abies douglasii;* III, *Umpqua zone*, between 42° and 43° north latitude, characterised by *Cupressus fragrans*; IV, *Sierra zone*, characterised by *Pinus lambertiana* and *Sequoia gigantea*.

(*c*) Rocky-mountain province. (Characterised by *Pinus flexilis*, *Pinus monophylla*, *Larix occidentalis*, etc.)

(*d*) Colorado province. (Reaching from Cascade to Rocky mountains, open country.)

(3) Atlantic North American region.

(*a*) Appallachian province. (The forest district of the Atlantic North American region, south of the lake province includes three zones. I, *Allegheny zone*, characterised by *Pinus inops*, *Pinus pungens*, *Pinus rigida*, *Picea fraseri*, *Juniperus virginiana*; II, *Carolina zone*, including New Jersey, Delaware, Maryland, Pennsylvania, Virginia, Georgia; III, *Mississippi zone*, including the forest district of the Mississippi valley.)

(*b*) Prairie province. (The western central and central prairies of the Atlantic drainage, including also the Saskatchewan and Assiniboian prairies of Arctic ocean drainage.)

Drude: The most recent and most generalised division of the earth into botanical regions is that of Drude. By this writer three main regions are recognised. These are:

A. Northern realm.
B. Tropical realm.
C. Southern realm.

These three principal regions are subdivided as follows:

A. Northern realm.
  (1) Arctic region.
  (2) Northern region.
  (3) Middle North American region.
  (4) Mediterranean-Oriental region.
  (5) Lower Asian region.
  (6) East Asian region.
B. Tropical realm.
  (1) Tropical American region.
  (2) Tropical African region.
  (3) Indian region.
  (4) Malayan-New Zealand region,

C. Southern realm.
  (1) Andes region.
  (2) South African region.
  (3) Australian region.
  (4) Antarctic region.

None of these regions are very sharply limited but are defined so as to indicate the transitions. Of Realm A, the last four regions are tropical as well as northern in their character. In all regions of Realm B there are to be observed, especially at higher altitudes, elements transitional between A or C. In Realm C, only the fourth region is comparatively uninfluenced by the plants of Realm B.

The region of the Minnesota valley, according to the classification of Drude, lies partly in the Middle North American region and partly in the transitional region between the Middle North American and the Northern. Its principal characters are derived from the commingling of a group of north bound generally endemic plants with a south-bound group of less generally endemic plants. Its old-world character is given rather by the influence of the Northern region—and this influence is most distinctly felt in the upper latitudes of the valley—than by the southern. As will be shown later, the species of plants common to the Minnesota valley and to the old world are generally more northern than southern in their North American distribution.

General position of the Minnesota valley as a botanical district. From the different classifications given it will be seen that the Minnesota valley, in the botanical sense, is first of all, northern-extratropical; second, North American; third, middle North American. This order corresponds with the geographical order. It will now be necessary to note the general methods by which the melange of plants found growing in such a region becomes possible.

Greater compositeness of the Northern realm. In any of the classifications of the botanical regions of the earth it will be noted that a greater homogeneity is to be seen in the regions of the northern hemisphere than in those of the southern, The reasons for this difference are both geographical and geological. The Antarctic region consists of a series of isolated areas such as Kerguelen, New Zealand, Patagonia and the lower Cape of Good Hope district. The Arctic region on the other hand consists of a compact circle of land surrounding the unknown polar area and broken only by narrow inlets such as Berings straits or Davis strait. Spitzbergen is the only relatively isolated island in this region and its distance from Nova Zembla on the one side and Greenland and Iceland on the other is slight compared with the distances between Kerguelen, the Cape, Terra del Fuego and New Zealand and Chatham Islands. The distances being less between the continental or island areas of the northern hemisphere than between such areas in the southern, we are prepared to expect smaller differences between regions on different meridians of the northern than in the case of regions similarly situated in the southern extratropical regions. The facilities for migration and commingling are evidently much more favorable along parallels of latitude in the northern than in the southern hemisphere. It happens, then, that while in the southern hemisphere the Antarctic region is the only one including land in both eastern and western hemispheres, in the northern hemisphere the next region south of the Arctic region is likewise common to both eastern and western hemispheres. This region is the Conifer region of Engler and the Northern region of Drude. Further, in the northern hemisphere there is from Arctic circle to the equator a generally greater latitudinal mixing of plants than in the southern and this is apparent even when there is too little of it to permit grouping the regions affected under the same division. For example, as pointed out by A. Gray and later by Miquel, the Japanese-Manchurian region presents striking resemblances to that of the Appallachians; the Californian and Mediterranean-Oriental have much in common, and the Prairie province of North America is not unlike the Central-Asian steppes in its plant-population. Isolation of regions is therefore characteristic rather of the Southern than of the Northern realm and the difference in degree of isolation has had much to do with the differences which have arisen between the characteristic elements of the Northern and the Southern botanical realms.

Beside the geographical character of the northern hemisphere certain important geological characters have had an interesting effect upon the mixing of the plants in the Northern realm. First should be noted that the evidence, geological and biological, is in favor of supposing a closer union of Alaska with eastern Asia, in Tertiary times. The sharp distinction between the plants of Greenland and the Scandinavian peninsula compared with the almost imperceptible differences between the floras of Alaska and Kamtschatka or Saghalin is interestingly explained by this ancient continuity between the two continents. Second, it is important to observe the effect of the profounder glaciation of the northern hemisphere than of the southern. The largest continuous area of glaciation is that of the North American continent. Here it comprises most of the land east of long. 97° W. of Greenwich and north of lat. 42°, although it extends south to 39°. The next largest is the area of western and central Europe where it comprises the territory east of western Russia and north of Poland and Germany. In the eastern hemisphere it extends south to 51° N. lat., or to a region of temperature approximately equal to that of southern Illinois, in North America. Other drift-areas in the northern hemisphere, such as those of the Alps, the Pyrenees, the Carpathians, the Himalayas, the Cordilleran range or the Tennessee mts. are more strictly local, but have played their part in the commingling of plant forms. The effect of the glaciation of the North American and western European areas has been productive of a distribution of distinctively northern plants ("*glacial plants*") southward, as one of the more simple results. More indirectly it has been productive of diversity in the flora of the northern extra-tropical regions by the forced origin of new forms during the earlier southward movements and the succeeding northward returns. As has been noticed by many writers this diversity is greater in the western hemisphere than in the eastern, evidently on account of the different continental positions of the principal mountain ranges. In North America the Rocky, Sierra, Coast and Appallachian systems all run from north to south and present to north-bound or south-bound plants no barrier, but rather an appreciable assistance by way of providing different altitudes at which acclimatisation might progress most comfortably. In the old world, the Pyrenees, Alps, Apennines, Carpathians, Caucasus and Himalaya mountains maintain a generally east and west direction, and to plants migrating southward before the glaciers would have presented an impassable barrier. Decimation of old-world species would thus result in the conditions of difference as seen to-day between the old world and North America, where the migrations were not opposed by the topography of the country. In both the proximate and remote movements of plants under the influence of widespread continental glaciation, the higher mountain ranges, by presenting a wider range of temperature in latitude, to be compared with the range of temperature in latitude, would favor the southward and northward movements more distinctly than would the lower mountain range. The writer has shown elsewhere that, of genera which reach their maximum number of species in Canada, about twice as as many species are distributed south to lat. 30°, and thereabouts, in the Rocky and Sierra ranges as in the Appallachian.

PRESSURES AND TENSIONS.

General considerations of equatorial pressure. We have already seen that the plants of tropical regions may be considered as striving to migrate to higher latitudes. In this way a general pressure of plant-population is set up along the central regions of the earth's surface. This pressure diminishes as one approaches the equator, but becomes greater through cumulative additions as one passes into extra-tropical regions. A similar north and south polar pressure of population is set up by the plants of northern and southern regions. It thus happens that two lines of tension might be run around the earth in northern and southern extra-tropical regions, and these lines would be marked by transitional floras and by more or less organised competition between the northern and southern forms. Under the positive equatorial pressure opposed by the negative polar pressures a segregation of metaspermic plants would take place in such a way that gradually the weaker and older forms of plants would find themselves pushed out between the interstices, as it were, of the stronger. and would thus be compelled to content themselves with conditions of existence progressively more difficult. In the northern hemisphere then, the Monocotyledones form a large percentage of the northern, and the Metachlamydeæ a large percentage of the southern species. For the Monocotyledones as a group are lower in the scale of organisation than the Archichlamydeæ or Metachlamydeæ. The result of what I have named here equatorial pressure has this peculiar effect upon the construction of plant-zones—or to employ a different comparison, plant-armies—that the weaker are always forced to fight in the front. In the case of the trees of the Archichlamydeæ in North America, those with undivided leaves are more northern in general than those with divided leaves. The range of *Populus*, *Betula*, *Salix*, *Acer* is in general more northern than that of *Fraxinus*, *Gymnocladus*, *Gleditsia*, *Sophora* or *Lysiloma*. But the compound leaf is a tropical character, as indicated by Grisebach, and marks a development from, and improvement over the simple leaf. It is important to notice that this state of tension which has been described, while of a purely biological nature, serves to produce results quite analogous with similar physical tensions. In the mutual pressure of solids the liquid that may be contained in their pores is crowded to the surface of the mass. In the same way we may figure to ourselves the weaker plants of a formation crowded to its periphery where they meet and struggle with the weaker plants of an adjacent formation. This is excellently seen in the line between forest and prairie in such a district as the Minnesota valley. It is not the characteristic grass of the prairie that grows close up to the characteristic tree of the forest, but between the two there is a zone of plants not perfectly established in either forest or prairie. This transitional formation between forest and prairie is generally composed of species weaker than the characteristic plants of either formation.

Movement of tensions. Again it is apparent that under the present climatological conditions of the earth the equatorial pressure must increase and that the polar pressure must diminish. Under such a generalisation of plant-dynamics it becomes apparent that with all the complex interdependences and competition of individuals with individuals, species with species, formations with formations there is, more fundamental and more general, a competition between the centrally and the distally located individuals, species and formations. Further it is apparent that the line of tension as it has been termed will progressively move to higher and to higher latitude. Thus as the cumulative equatorial pressure increases while the cumulative polar pressure at the same time decreases, the line of tension, other things being equal, will manifest progressive acceleration in its movement from lower to higher latitudes. A number of conditions intervene to retard this movement of the line of tension and in consequence it is less rapid, actually than hypothetically. Among these retarding conditions are the increased difficulty of acclimatisation of north-bound plants as they extend further northward and the increased solidarity and consequently increased resistance of northern plants. And beside these two general factors in the retardation are the factors in the special cases as they might be named—the various conditions, topographical, nutrimental, biological, which confront each individual or species as it increases its range in any direction. The most important visible results of these retarding influences are to be looked for in the changes of habit of growth or habit of nutrition in the plants in question. Under these retarding influences the gradual development of monocarpic into polycarpic forms, of herbaceous into shrubby and of shrubby into arborescent types may be brought in evidence. As the distribution of the herb is more rapid than that of the shrub and the distribution of the shrub more rapid than that of the tree, any influences that induce the emergence of shrubby or arboreal characters may be deemed distinctly retarding in their general effect. That such a difference of mobility actually exists is derived from the testimony both of experience and of *a priori* reasoning. The adventive plants and the escaped plants in any region are always in large part herbaceous, because it is more easy for plants of small size and rapid maturation to gain a foothold than for plants of large size and slow maturation. But in the internal competition for light—the important energising force of plants—the emergence of the shrubby or arboreal character may be expected and precisely as it becomes more prominent—unless other modifications arise to maintain the general equilibrium—will the rate of distribution decrease. In general we see that the higher forms of archichlamydeous trees such as the linden, the maple, the walnut, are heavier seeded than the lower forms such as the willow or the poplar. The increased size of the seed is necessary to provide for the increased difficulties that surround the establishment of the seedling, So thus it is evident that the development of the arboreal type exerts a retarding influence upon distribution.

Fluctuation in tensions. Fluctuations in equatorial pressure may arise in several ways. Beside the general acceleration due to the increased extension of the central groups of species and formations and the general retardation due to the causes mentioned, there will arise fluctuations which may originate in widely diverse conditions. These conditions may be topographical, climatological, geological—in the widest sense—or biological. The erosive action of streams, by reducing the general altitude of a tract of country, brings about alterations in the rates of plant movement over such a tract. And by the reduction in altitude, changes in annual rainfall, annual temperature, mean direction of winds, and in maxima or minima of each of these, are brought about. Or again secular changes in the general level, due to orogenic movements in the crust of the earth, may induce greater or less fluctuations in the rate of movement of the line of tension, as they are themselves of greater or of less magnitude. This effect may be either mediate through the modification of climate or immediate by the alteration of topography. And still again, the countless variations in those conditions which, from their complexity, are given the name of biological, have marked and ample influence upon the general rate of progression. The entrance and acclimatisation of some alien species of plant or animal, the activity of man in burning or felling the forest and in tilling the meadow-land or prairie, the movement of herds of ruminating animals, such as the now almost extinct bison, the flight of migrating birds, invasions of destructive insects or of parasitic fungi—all these and many other kindred phenomena may and do affect the movement of the line of tension, by distributing seeds, destroying rival plants, introducing new competitors and altering the dynamic equilibrium either generally or locally, and either continuously or discontinuously.

Influence of equatorial pressure on habitat. The general existence of equatorial pressure, of tension-lines and the laws of the progression of the tension-line, having now been noted briefly, it remains to observe what is the influence of equatorial pressure on the selection of habitats. Under the relentless ejection of the weaker plants from the more favorable localities, and the increasing solidarity of the stronger plants in characteristic formations, it is apparent that greater and greater specialisation of form and physiology, together with increasing specialisation of habitat, must arise. It is therefore interesting to observe that the highly special habitat is commonly occupied by the highly specialised plant. The epiphytic orchids which have accommodated themselves to a condition considerably removed from the original aquatic condition of plants, are themselves members of the highest family of the monocotyledons. The cacti of the arid regions, the dodders that entwine themselves about the stalks of other plants, the bladderwort which floats upon the surface of stagnant pools and feeds itself with minute crustacea that it has learned to capture in its bladdery weirs, are all plants high in their respective divisions. On the other hand the cat-tail (*Typha latifolia*), one of the lower plants of its division, is less specialised in habitat The least specialised habitat, the aquatic, is peculiarly the region of the lower groups of the Metaspermae. A most general result then, of the equatorial pressure is seen in the specialisation of habitats. This is a result of the competition following the ejection of the weaker.

Again the equatorial pressure has an indirect influence upon habitat, under the law termed by Herbert Spencer the *multiplication of effects.* As one plant is forced into a new and generally poorer habitat, to which it becomes more or less exactly accommodated, it exerts a constantly widening influence upon other plants some of which, already established in its new habitat, are brought into a new phase of the struggle for existence by the recent addition, and others competing for the abandoned territory are in turn exposed to the modifying influence of natural selection. Thus it happens that the general effect of what has been termed equatorial pressure has an incalculably wide and profound influence upon the plant physiognomy of any district. In this analysis it will be seen that general answers—partial, it is true, but capable of extension—are provided for some of the questions propounded in the opening pages of this chapter. Conditions in the Minnesota valley must be explained by conditions elsewhere. This area in the line of tension must be studied with an eye directed towards the dynamic centers which make it possible for such a line of tension to exist.

Secondary longitudinal tensions. Besides the general line of tension to which notice has been directed there exist at least six other principal secondary longitudinal tension-lines in the North American continent. The influence of these is felt but slightly in the Minnesota valley, in comparison with the lateral line. The origin of the six principal longitudinal tensions is to be referred to the three meridianally extending mountain ranges that arise in the eastern, western-central and western regions of the continent. Between the Sierras and the Pacific coast occurs the western tension-line; between the Sierras and the Rockies what may be termed the Sierra and western Rocky mountain tension-lines; between the Rockies and the Appallachians, what may be termed the central and Appallachian tension-lines, and between the Appallachians and the Atlantic coast, the eastern tension-line, The origin of these tension-lines is precisely similar to that of the main continental tension-line that runs in a direction generally east and west. They arise from the fact that the alpine summits and elevations serve for southward extensions of the northern group of plants, and these northern plants are brought into competition with the plants of lower levels which are crowded laterally as well as longitudinally, and tend to expand their areas of distribution from meridian to meridian as well as from parallel to parallel. As there was before to be distinguished a progressive movement, with attendant accelerations and retardations, to higher latitudes, so here there is a similar movement towards higher altitudes, and as fluctuations arose before in the rate of progression, so, too, similar fluctuations will here arise from similar conditions. In general these longitudinal tensions are to be studied under the laws of the lateral tensions.

So far as concerns the Minnesota valley the central tension-line lies far to the west of it and this fact will be seen to have an evident effect upon its floral population when, in the next chapter, more particular and detailed attention is given to the character of that population. And so, too, the Appallachian tension-line lies far to the east of the valley. Its influence like that of the central tension-line is slight. Indeed the influence of these two longitudinal tensions is felt only indirectly in a region so remote from either as is the valley of the Minnesota. Such indirect influence is however appreciable, and is apparent on the one hand in the presence of plants like *Collomia* and on the other by the presence of the different species of *Rhus*.

Minor tensions. In an area, considerable in extent and diversified in topography, as is the valley of the Minnesota, there are to be distinguished what I may be permitted to term *minor tensions*. By this there is not meant the forest and prairie delimitation, for that is to be referred in large part to the principal lateral tension, developed by equatorial pressure. The various topographical features of the Minnesota valley, with its gorges, glens, vales, meadows, hills and headlands, bring about slight but distinguishable segregations of floral elements. Between meadow and bluff there exists a minor tension-line, between swale and knoll on the prairie, between hill and ravine in the forest there are to be discovered such minor tensions. But just as these minor tensions are due to slight differences, so too their progressions, accelerations, retardations and fluctuations are so variable that their very existence becomes a matter principally of averages. Nevertheless their presence may be determined in the field or *a priori*. The influence of these minor tensions on habitat is great, but it is after all an influence transmitted from the more general continental tension and may as properly be referred to the latter. Upon the physiognomy of the district these minor tensions have a conspicuous effect and to their presence may be ascribed much of the variety of floral elements met with in a morning walk over any portion of the basin.

The influence of these minor tensions is most interestingly portrayed in the modifications through them of the general lateral tension line. For example the irregular contour of the limiting line between the forest and the prairie is due in part to the presence of minor tensions, either positive or negative, along the general line, and by means of these minor lines the exact outline of the forest edge is, in part, determined. In explaining the contour of the forest line it is apparent then that we must consider a number of different forces acting both directly and indirectly, in varying degrees of directness or indirectness. The more direct influence of the relative humidity, elevations, soil compositions, exposure to light, etc., are accompanied by those indirect influences which appear most distinctly in the tensions. As in the Minnesota valley from New Ulm to Montevideo the south bluffs are more densely wooded than the north—apparently because their exposure to the desiccating action of the sun's rays is less—so in less extended areas one may recognise the effects of the minor tensions in determining the physiognomy of smaller and still smaller areas. This group of tensions may then, for each degree, be reduced to more and more special cases, and ultimately appears in the form of mutual competition between adjacent individuals of the same, or different species, or even between differently situated organs of the same individual. By synthesis of competitions, together with progressive alterations of climate, topography, distance and the rest, the tensions may be considered to arise; and by analysis of the various degrees of tension we come back to individual competitions and to more and more definite geographical influences.

General division of the world into botanical realms. From the considerations given it will be seen that a yet more general division than that of Drude may be proposed. The two great realms are:

(A.) The Central Realm.
(B.) The Distal Realm.

The valley of the Minnesota is upon one of the transition lines between these two principal realms.

OUTLINES OF METASPERMIC HISTORY IN THE NORTHERN HEMISPHERE.

Emergence of metaspermic forms. Leaving aside the probable origin of metaspermic plants in point of development from archetypal Archegoniatae, it is possible from the evidence of palaeontology to calculate the general period of their emergence. In rocks older than those of the Lower Cretaceous remains of metaspermic plants are exceedingly rare and doubtful. This indicates an origin somewhere in the Jurassic period, although by some the time of their appearance is placed as far back as the Devonian. During the Lower Cretaceous several highly developed monocotyledonous or archichlamydeous plants must have begun the winning struggle with the less highly organised ferns, club-mosses, cycads and conifers of older geologic time. In the Potomac formation of the Atlantic United States, as studied by Fontaine, several remains of metaspermic plants intermingled with those of archaic varieties of ferns and cycads have been discovered. Through the Cretaceous period the metaspermic plants developed with rapidity, and in the Upper Cretaceous had established themselves as the dominant forms over a considerable area of the earth. The researches of Heer, Lesquereaux and others in the North American continent have revealed the vestiges of an ancient flora, considerably diversified and of a highly modern aspect. During the Cretaceous period the smaller extent of the North American continent, its isolation and attendant division by the Cretaceous Mediterranean which extended from the present boundary of the Gulf of Mexico through the Rocky mountain region to Alaska, may have had much to do with the rapid development of metaspermic types. During this time the Californian and Sierra region formed a separate continent, and on the other side of the sea lay the Atlantic continent, extending south about to the present region of the Ohio river. Evidently during this time and in succeeding ages, the climatic conditions varied greatly from those of to-day, for in the Cretaceous and later Tertiary rocks of Greenland, Spitzbergen, Nova Zembla, Point Barrow, the Mackenzie islands and of other localities far within the Arctic circle, there are found the remains of a flora characterised by large leaved palms, exogenous plants and even cycads, thus giving a distinctly tropical aspect to the vegetation of circumpolar regions. This tropical character persisted until comparatively recent times, when by the great elevation of the polar regions and by probable changes in oceanic currents the conditions became those of the glacial epoch, since which time there has been a moderation in the temperature of the northern hemisphere, but by no means a return to the Tertiary benignity.

Character of the Cretaceous flora. As has been shown in the preceding chapter the main gorge of the Minnesota river has, in part, existed since the times of the Upper Cretaceous, and was possibly formed in even an earlier geological epoch. The drainage might have been and probably was in the opposite direction at that time, but from the presence of Cretaceous deposits in eroded portions of the Shakopee limestone we know that at least the lower portion of the gorge was in existence before the formation of these deposits. At that time, as shown by the remains of the Cretaceous flora of the Minnesota valley which have been collected by Lesquereaux from the Cottonwood valley localities, the basin supported species of figs, sequoias, or "big trees," pines, laurels, magnolias, persimmons, poplars, willows and others. Of the twenty-eight species described by Lesquereaux in his *Cretaceous Plants of Minnesota,* two are Conifers—one *Sequoia* and one *Pinus*—two are metachlamydeous and twenty-four are archichlamydeous. This is too small a collection to generalise from, but other collections of Upper Cretaceous plants throughout the region of their occurrence in North America indicate the same general percentages, so much in favor of supposing archichlamydeous plants to have been in a greater preponderance among the total Metaspermæ than to-day. Regarding the physiognomic characters of the flora it has been pointed out by Lesquereaux in 1874 that the indications are rather of a low-shore or morassic habitat than of a distribution on drier hills. Under the law of tensions we should expect to find the emergence of the newer types upon just such territory, and the more favorable land would doubtless have been occupied by the older types of plants. This seems to the writer the true explanation of the apparent suddenness with which metaspermic plants emerge in the Cretaceous. The geologic formations in which they are preserved are fit to preserve also the coniferous or cycadean elements, if they were conspicuously present. That these are less abundantly represented has generally been supposed to indicate a preponderance of metaspermic elements in the general flora. The facts seem, however, to indicate quite the reverse of this, and properly interpreted enable us to form a very different picture of the Cretaceous plant-physiognomy. Under the law of ejection of the weaker the sea-shore would present a general tension-line and here would be gathered in narrow strips, but extending somewhat up the rivers and distributed in the marshes, the newer and struggling Metaspermæ.

In such a region of high competition specific and ordinal characters would have progressively appeared and the littoral regions of the Cretaceous ocean, both east and west, would have been fringed with the more highly specialised types of plants. But the interior would more probably have been occupied by solid masses of coniferous, fern-like and club-moss-like plants. The general physiognomy then of Cretaceous regions must have been much more distinctly coniferous than that of Northern Minnesota at the present time. The proximity of the fringe of metaspermic plants to the beach or estuary formations in which their remains are preserved as imprints in the Cretaceous sandstone together with the remoteness of the solid masses of coniferous plants from the same formations is the reason for the preponderance of the former as fossils.

The Tertiary flora. In Tertiary times, however, the Metaspermæ had gained much ground, although they were probably not so prevalent as they are to-day, nor had the dispersion of the older coniferous flora reached such an extent as under modern conditions. During at least the Miocene period of the Tertiary the temperate climate of the Arctic regions persisted, and during this time a considerable mingling of plants took place over the northern hemisphere so that the influence was felt by the plant-populations even to the eqnator. Engler has interestingly discussed this Tertiary migration, and, in his chart illustrative of it, the principal lines are indicated. In the old world the movement extended to Arabia and Abyssinia, by way of the central Asian route. At this time the central Asian region was occupied by a large lake and a chain of such great lakes extended throughout a large portion of the middle Mississippi valley in North America. During this period the western and eastern portions of the North American continent, now connected by the land area which in great part replaced the Mediterranean ocean of the Cretaceous, were affected by immigrations from the northwest and the characters of the Japanese-Chinese region and the upper North American were doubtless more similar than they are to-day. For example the curious gingko tree now isolated in the Japanese-Chinese region was distributed also over portions of Europe and Canada. This Tertiary mingling had a profound effect upon the development of monocotyledonous and archichlamydeous types. In both groups many arborescent forms originated. While to-day there is not a single monocotyledonous tree in the region of the Minnesota valley, there were then, in adjacent regions where Tertiary deposits are found, and quite certainly therefore in the valley, several varieties of palms. The archichlamydeous arboreal types reached a high degree of expansion and some of the noblest trees—such as the tulip-tree (*Liriodendron tulipifera*), for example—which are now of restricted North American range, were then widely distributed around the northern hemisphere. This middle Tertiary time might be called the *Age of Archichlamydeæ* just as the present age, succeeding the glacial epoch might be termed very appropriately the *Age of Metachlamydeæ.* In North America the Tertiary movement extended from the polar regions at least to southern California and probably to Georgia. Under the competition and tensions of such a wide-spreading southward movement the development of many of our modern genera took place and even of several of the more common modern species of Monocotyledones and Archichlamydeæ. In this period, or more probably earlier, the newer types of the Metachlamydeæ with their highly modified flowers and fruits began to emerge.

In a general sense then the monocotyledonous and archichlamydeous plants of the Minnesota valley derive considerable explanation from the consideration of Tertiary comminglings just as do the metachlamydeous forms from interglacial and post-glacial comminglings. Even in Tertiary times the monocotyledonous trees must have been sharply attacked by the robustly developed archichlamydeous forms, but it was not until the glacial epoch that their hold on the region of the Minnesota valley was finally destroyed.

The post-Tertiary movement. After Tertiary time the elevation of the northern part of the North American continent and of the western part of the European continent, together, very probably, with the secular inclination of the earth's axis, brought about the gradual glaciation of these areas. Not only once did the glacier plow its course southward in the northern hemisphere, but certainly several times. Two principal epochs of glaciation are recognised by American glacialists—the earlier one in which the terminal moraines reached as far south as 39° N. lat. and the second, during which the ice moved to a much less distance and piled up the morainic area of the lake region in Minnesota near lat. 45° N. This morainic area forms the northern boundary of the Minnesota valley. Under the rigorous conditions of the advancing continental ice-sheet it was necessary for plants either to migrate or to perish. Those for any reason well-fitted to migrate were selected for re-establishment at successively lower latitudes. Under the relentless overwhelming of the epoch large numbers of plants were ejected forever from the Minnesota valley, others were so modified in their movement south and return to the north that they appear to-day in new specific forms, while a large number of new forms, developed principally in the group of the Metachlamydeæ, have been permitted to gain a foot-hold. The palms and sequoias have been driven out of all this central North American region, the palms to maintain a precarious existence in tropical or insular regions, the sequoias to their last stand in the limited area of the Sierras, where they still continue their losing fight as the remnants of an almost extinct race of vegetable giants. The enormous size of the "big trees" of Calaveras county, has, however, one interesting word to tell us of the northern forests that were once their home. The very fact of their spreading their leaves to the light at a height of 300 feet above the surface of the earth gives us a hint of the tremendous extent to which solidarity of the Tertiary coniferous forests had progressed and permits us to understand how stern had become the competition for light in view of which such bulk was necessary for the preservation of the species. Just as in the formidable defensive armor of some extinct armadillo one may read somewhat of its struggle with its enemies, so in the one hundred meters of solid trunk and in the massive girth of a living *Sequoia gigantea* one may learn of its struggles in the ancient forest of Cretaceous and Tertiary times, when its allies and competitors were alike more numerous.

Of all the plants which went south before the first invasion of the glacial sheet none showed greater capacity for variation and improvement than the ancestral forms of the modern dominant family of the *Compositae*. Such plants as, by permitting their seeds to fly before the prevalent north winds or to attach themselves to the fur of migrating bison, mastodons or other animals, had achieved a lower latitude were of course assisted upon their return by the same characters. During interglacial time they doubtless established themselves upon the till of the Minnesota valley and underwent comminglings such as those of to-day. As calculated by Winchell from the study of abandoned gorges of the Mississippi valley, the interglacial period was approximately 9,750 years in length and this period as stated by the investigator named, would have sufficed for the development of a characteristic flora. Then the second great southward movement of the ice began, during, and perhaps late in which, the moraine of the Lake Region of Minnesota was deposited and the debris piled up in the Leaf hills to a level of three hundred and fifty feet above the surrounding country. The length of time that this glacier persisted in its southern extension is not known, but since its recession it has been calculated by Winchell from a study of the gorge of the Mississippi from St. Anthony Falls to Fort Snelling, and of the observed rate of recession of the falls, that a period of 7,800 years has elapsed. It is not certain that the proximity of the glacier even at its intermediate extension of the lake-region moraine would have prevented a plant population from establishing and maintaining itself in the valley of the Minnesota. To-day, in the Alps, one finds flowers blooming within a few feet of a glacier, and in Alaska it has been observed that plants of even a large size may continue their growth upon a slowly moving moraine. It is probable, however, that the adjacency of so large a body of ice, through its influence upon humidity and temperature, had an indirect influence upon the physiognomy of the Minnesota plant-population.

Results of the epoch of glaciation. The results of this widespread glaciation of the northern portion of the North American continent, in its effect upon plant-population in the Minnesota valley from the time of glacial retreat to the present, may be classified under two general categories. First, the effects of the glaciation upon the soil, topography and climate of the valley itself must be noted, and, second, the effects of the glaciation upon the plants, in so far as concerns modifications of types or novelties of distribution or habitats, are to be distinguished.

Under the first division of the subject the most important result is doubtless the great mixing of soil-components so as to form the characteristic clays, sands or gravels of the till. Since a large sheet of Cretaceous deposits was torn from the surface of the older rocks by the energy of the glacial advance the subsoils of the till region contain considerable of the Cretaceous elements. They are rather rich in calcareous, magnesian and silicious elements. The thorough kneading together of the various constituents has produced a soil somewhat generalised in its chemical character, and this soil by subsequent modifications presents from place to place a wide variety of conditions. It becomes, therefore, both a condition and, to some extent, a cause of the diversity of plant-population. From the bare gneissic rocks of the Granite Falls district one may find in the valley all sorts of variations to the peat-bog soil of the Mankato and Kasota districts. Here sands or gravels in various proportions, there clays of different compositions or mixtures of sands and clays give a great diversity to the soil-surface of the basin. As, through water agency, the soil becomes more and more analysed and segregated as one leaves the general prairie level in passing down some channel, so in the main gorge at different places where different kinds of selective action have progressed and where the cumulative selective action of tributary streams is felt, may be found the maximum of variety in passing from one area to another. It is possibly due in part to this relative homogeneity of the prairie soils and relative heterogeneity of the bottom-land soils that the prairie itself supports relatively a more homogeneous plant-population than the bottom-lands. The grasses, composites, pulses, polygalas, phlox and sedges of the rolling prairie constitute after all a rather small percentage of the total population of the valley. To contribute to this result not only past glacial actions, but present, continuous activities of rain, wind and temperature have played their part. It is, however, not incorrect to attribute, in part, the difference between the upland and lowland characters, to the glacial invasion.

The topography of the valley is evidently in great part due to the subsequent action of the various forces of nature upon the general mass of till which was deposited in a sheet averaging more than two hundred feet in thickness over the older surfaces of the basin. The original aspect of this drift-sheet was doubtless somewhat undulating and under the weathering and erosion of the last 7,800 years it has come to present its modern aspect. The hills have become rounded, the streams have cut their gorges and deposited their silt in the form of alluvium, the lakes, formed by the disturbance of the old drainage, have sometimes persisted, with, however, reductions of original size in varying degree, and have sometimes disappeared through the cutting and draining action of their ontlets or through the silting up of their inlets. Thus many level meadows have been formed and the production of such meadows from older lakes may be seen going on to-day. In this way, habitats are provided for aquatic plant-immigrants, for those that prefer the muddy or sandy shore, or for those that dispose themselves in the running water of the outlet or inlet streams. And as the topography has had its influence upon the distribution of the plant-immigrants so they in turn have had their reciprocal influence upon topography. By choking the ponds with generation after generation of individuals they have hastened the disappearance of the water and have then themselves either generally disappeared to make room for plants better fitted for the drier condition or have adopted more terrestrial habits. And by clothing the hillsides or shading the sides of ravines they have, both directly by their interposition, and indirectly through their influence upon relative humidity, modified the erosive activities of the water or the desiccating activities of the wind. As a foundation for all these complex, interdependent phenomena it is clear that we must assume the original surface of the till when the valley was abandoned by the ice-sheet in its retreat towards the pole. Both the general features of the topography and many of the special ones are therefore glacial in their proximate analysis. It must not be forgotten, however, that preglacial forces and conditions, by hollowing out the ancient gorge of the Minnesota and by determining its sea-level at different points are of similar importance in the final comprehension of the general and special topography. But, so far as concerns the more modern times it is clear that a base-line for historic discussion is very properly derived from the period when the glacier left its mass of undulating till to be worked upon by the rains, sunshine, winds, plants, animals, rivers, temperature of the succeeding years.

Under the second division of the subject—the action of the glacial period and its results as shown in the modifications of plants—there is little that need be added in so general a discussion. It has already been shown how distribution, under conditions variably favorable, will induce pressures and tensions; how these tensions will themselves move from one position to another; how the weaker plants are ejected to the periphery of formations where they enjoy less favorable conditions of nutriment, perhaps, but more favorable conditions of competition; how the tensions and competition are modified by various direct and indirect forces, chemical, physical or biological; how in the southward and northward oscillations of a plant-population, modifications of tensions, types, localities, habitats, physiology would ensue, and how the recurrence of glacial epochs accentuated the characters which had begun to emerge under previous glacial epochs. It has been shown how the Metachlamydeæ have been developed under the movements of plant-populations attendant upon glacial encroachments. It has been indicated how such a family as the Compositæ have derived their modern supremacy in the Middle North American region from their ability to move quickly among the flying or advancing plant-migrants. It remains to indicate the effect of resistance, topographical, climatic and biological, to such movements. As a group of plants began to move southward before the glacier they would find themselves opposed by rivers, hills and plains. Those at home on the hill would be interfered with by the plain, and *vice versa*. Again, the climate would doubtless change from latitude to latitude, although perhaps the general northern advance of the ice, by modifying the climate, would assist the south-bound plants by presenting conditions progressively more difficult for the south-established plants with which the south-bound plants were forced into competition. Lastly, a constantly new group of aboriginal plants, already established in southern regions, would oppose the entry of the south-bound forms to their territory. Thus any characters whatever which might contribute to the strength of the species would have been selected for perpetuation. Not only the pappus of the dandelion flower-fruit and the hooks of the *Bidens* achene would be seized upon for the protection of the species from extinction, but the shortening of the floral axis, the grouping of leaves to best catch the light, colors that might attract some insect allies, height, the increase or decrease in the size of the seed, all would, if advantageous, be imprinted on the species, and variations would ultimately arise sufficient to justify the grouping of the modified plants in categories different from those of the original plants. Under such stress it is easy to see how the raceme of flowers became shortened into the disk-like head, how the heads at first in different planes, or racemosely arranged, came to be compacted into the corymboid group of inflorescences, such as that of *Solidago rigida*. In every way, the general passage from indefiniteness to definiteness, in structure, form, physiology, habitat, distribution, would be a result of the enforced migrations. As factors in the evolution of plants we must admit that, for the northern hemisphere in particular and for North America most particularly, the ancient and repeated glaciations were of the utmost importance.

Conditions of the present. Clearly all of the phenomena of the distribution of plants in the valley of the Minnesota are now discovered to be phenomena of evolution. Does this evolution go on before us? The question scarcely needs an answer, so evident is it that such forces as have always been at work in the distribution of plants are at work to-day. Certainly there is not the advancing glacier of 8,000 years ago, but in other ways the struggle is directed so that pressures and tensions are set up throughout the region of our study. The reëchoing influences of the past, the constant struggle of the present—these are the two deeper factors of distribution that demand our careful investigation. To-day we find this struggle organised under the different degrees of tension and we observe constant, although slight, changes in the plant population. The influence of man is now more important than the rest of the biological influences. Through his interposition a large portion of the prairie and bottomland has been put under cultivation. In 1890 the basin contained 327,852 human beings, or an average of 20.5 to the square mile. The activity of the human population, by importing new plants and establishing them, by decimating the number of originally established individuals in some of the species, by permitting a group of 130, or more, alien plants to escape during the last forty years and establish themselves in varying degrees, has had a profound influence upon the plant-physiognomy of the valley. Among the biological factors of modern times the activity of man is conspicuous. Not only directly has he influenced the distribution, but indirectly through the importation of new animals, such as sheep, cattle, swine, fowls or horses, that, in turn, by their activities, have modified the aspect of the plant-population He has exterminated many of the wild animals, notably the bison, which had a peculiar influence upon the distribution of plants, different from that of the domestic animals. He has planted trees, felled them, burned the underbrush, torn up the prairie with the plow and in a hundred ways altered the adjustments between individuals, species and formations of plants in the valley of the Minnesota.

Summary. The distribution of plants in a natural region presents many problems. These are found to be complex and demand for their solution a wide range of collateral information. Plants are found everywhere maintaining dynamic relations with each other. These relations have much to do with the facts of their distribution. Differences exist between the different portions of the earth's land-surface in point of vegetation. These differences resolve themselves into distance, humidity and history differences. It happens then that the earth can be divided into floral regions. The northern hemisphere is more composite than the southern and its several regions are more affected by each other than are those of the southern. The Minnesota valley is found to bear closer relationship with certain portions of the earth than with others. The geological history of the country is needed for the explanation of all these phenomena. There is a general tension between plants centrally and distally located on the earth's land surface. More special tensions, between areas less and less, arise from this general tension and contribute to the general tension. The tension-lines are not constant, but variable under a complicated series of modifying laws. By means of these tensions, habitat, physiology, evolution, have been altered in their character. The origin of metaspermic plants was probably in the Jurassic. During Mesozoic time they had a very slight foot-hold on the periphery of stronger formations. In Tertiary time they underwent various migrations and became more strongly established. After Tertiary time the movements of glaciers had a profound influence upon the evolution and distribution of plants. The results of this glacial period are to be discovered in the conditions of the present. To-day, under various forces, the modification of the flora still continues.

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STATISTICS OF METASPERMIC PLANTS OF THE MINNESOTA VALLEY.

Value of statistics. In the following pages such numerical data as have seemed most necessary for an understanding of the distributional characters and physiognomic features of the Minnesota valley Metaspermae have been compiled. It is proper first of all to call attention to what has well been stated by De Candolle—that somewhat too great an air of mathematical exactness is conveyed even to professional botanists, by statistics of such a nature. The apparent rigidity of the calculations inspires a mistaken notion of rigidity in the distribution. On the contrary, however, the statistics are not truly indicative of such mathematical exactness of distribution as their appearance would imply; they are to a certain extent of the nature of averages or estimates. There are in their compilation, too, certain sources of error; for example, in the table which gives the north, south, east and west preponderance of species in the North American continent, the entry of any species is a matter of judgment from published geographical lists, and either the data of the lists may be incomplete or erroneous, or the judgment may be faulty. In order to correct such error it has been my effort to compile the statistics from several points of view. Under such method it is presumed that they will mutuall correct each other and the general results will thus come to be of definite reliability.

Again, there is the danger that the personal equation of error, indicated in mistakes of counting or calculation, will permit a degree of vitiation that were better avoided. Although each group of statistics has been carefully compiled and the results checked in such a way as to guard the general results to what extent may be possible, it will readily be seen that a single small error would propagate itself unlimitedly, if by accident it should creep into the preliminary count.

In the third place, it must be noted that the possible oversights and errors in collection of plants and their subsequent determination, or errors in compilation of herbarium data, or overlooked errors in printing, or the failure to set down each group of data properly in preparing the manuscript, might all influence the statistical results which are about to be presented. Together with all these errors comes the chance of mistake in printing the statistics themselves, by omissions or by alterations, in going through the press. It is apparent, therefore, that the air of mathematical exactness presented by the figures of a tabulation is, to some extent, deceptive.

On the other hand, these chances of error thus stated in detail must not be overestimated. In spite of them all it is quite probable that every statistical entry will be sufficiently exact to serve as the basis of a generalisation concerning the distribution of Metaspermae in the valley of the Minnesota. Errors tend mutually to correct each other, and under the law of averages the results of a series of calculations vary little one way or the other. If it be discovered, for example, that of all the species indigenous to the region studied, 55.6 per cent. are of distinctively northern range, in North America, while 76.1 per cent. are distinctively southern in their range there is absolutely no question that the Minnesota valley Meta spermae are distinctively southern rather than northern in their distributional characters.

Thus it happens that the preparation of statistical tables is of real value in so far as they serve to group together facts that may be used for generalisation. The percentages themselves may be somewhat inexact, but the ratios between different percentages and the general comparative result will hardly be affected by the minor errors.

Point of view of statistical compilations. The compiler has brought together such statistics regarding families, genera and species as have seemed to him fitted best to indicate the distributional and physiognomic characters of the metaspermic population of the Minnesota valley. Unfortunately there are not lists of plants of other drainage-basins in North America with which comparisons would be instructive. Such comparative statistics are therefore omitted and an effort has been made rather to determine characters by an analytic process than synthetically to bring together results of comparison between the Minnesota valley and other districts. The inadequacy, from a scientific point of view, of comparing the Minnesota valley population with that of such a commonwealth as Nebraska, of which careful floras have been compiled, has already been intimated in the introductory chapter of this work. A political district can not have any distinct meaning in a plant-distributional inquiry. So, too, a comparison between the species of the Minnesota valley and those of the Atlantic United States, as compiled in Watson and Coulter's edition of the *Gray's Manual*, or between the valley species and those of the southern states, as compiled in Chapman's *Flora of the Southern States*, would be of doubtful value and nothing of the sort has been attempted. The idea has been, as stated, to analyse the plant-population with a view of discovering the preponderance-ratios of various distributional and physiognomic elements.

Points of statistical investigation. In a relatively circumscribed area, specific forms—and with these I. have always included varietal forms as of the same implication—are more valuable than generic, and generic characters more important than family or ordinal characters. Being more limited and more definite, they are at the same time more easily handled with approximate exactness and more instructive than characters of a greater generality. The principal compilations for the North American continent comparisons are of specific ranges and characteristics. But in determining the relationship of the Minnesota valley Metaspermæ to the Metaspermæ of the whole northern hemisphere, and of the world, the generic or family characters come into play as the more convenient and more exact for purposes of comparison. The general position of the Minnesota valley in the plant-population regions of the earth is first examined from the statistics of families. Next, the position of the Minnesota valley as an area of the northern hemisphere is determined, principally from the statistics of genera, although to some extent, also, from species. Last, the position of the Minnesota valley in the North American continent is determined principally from the statistics of species, although to some extent also, from genera. For the larger regions the larger categories are used as indications of comparative population. So far as concerns the determination of physiognomic characters only specific forms have been tabulated, for it is to species and not to genera that the plant-physiognomy of any region is to be referred

I. EXAMINATION OF FAMILIES REPRESENTED IN THE MINNESOTA VALLEY.

The total number of families represented by the metaspermic plant-population of the Minnesota valley is 106. According to Engler and Prantl, the total number of metaspermic families in the world is 222. Thus 48.0 per cent. of all the families in the world are represented within the region of our study. Of the 106 families, 21 are Monocotyledones, 60 are Archichlamydeæ, and 25 are Metachlamydeæ. The total number of monocotyledonous families is 43, of Archichlamydeæ, 131, and of Metachlamydeæ, 48. Thus there are in the Minnesota valley, 48.8 per cent. of all monocotyledonous families, 45.7 per cent. of all archichlamydeous and 52.0 per cent. of all metachlamydeous families. Of all families in the valley, 19.8 per cent. are Monocotyledones, 56.6 per cent. are Archichlamydeæ and 23.5 per cent. are Metachlamydeæ. These facts are condensed into the following table:

1. Statistics of Families.

	No. in valley.	Per cent. of all in valley.	Valley per cent. of each.
Monocotyledones.............	21	19.8	48.8
Archichlamydeae	60	56.6	45.7
Metachlamydeae.............	25	23.5	52.0
Total in valley...........	106	100.0	48.0

Not all of these families are equally distributed over the world. Some are much more limited in their range than others. An examination of the general range of the 106 families represented in the valley of the Minnesota shows that they may be divided, according to their range into, six groups as follows:

A. Cosmopolitan families.
B. Extratropical families.
C. Tropical and subtropical families.
D. Northern extratropical families.
E. Western Hemisphere families.
F. North American families.

It will be necessary to observe one or two points in this division. In the first place it must be recognised that not all of the families in any of these groups are of equivalent distribution. In Group A, for example, have been included such families as are represented in both tropical and extratropical regions of both eastern and western hemispheres. A family of which the range answered to such a description might nevertheless be very much more limited in its distribution than one which might be found in almost every continent or island —as, for illustration, the *Juncaceæ.* The groups are therefore intended to be and are somewhat elastic. Again, it is sometimes thought advisable to include the same family in two, or even three groups, in order to give the proper notion of its range. For example, the *Sarraceniaceæ* includes three genera, *Sarracenia, Chrysamphora* and *Heliamphora.* The first two are limited to North America, one being Atlantic, the other Pacific. The third is found in British Guiana. Under these conditions of North American preponderance it seems proper to enter the *Sarraceniaceæ* as North American. But since a genus is developed in South America it seems proper, too, to enrol the family among the Western Hemisphere forms. Third, it will be noticed that Cosmopolitan families belong also to the next five divisions; Extratropical families include also the Northern extratropical. North American families are included in the Western Hemisphere group. Evidently, then, the general intent of the classification into groups is to give not total range, but *distinctive* range. We see, then, how the *Juglandaceæ* may be classed as Northern Extratropical, while the *Saxifragaceæ,* being represented also in the southern hemisphere, are more properly placed under the wide group of Extratropical families.

The following table will indicate the distinctive range of Minnesota valley families:

A. Table Illustrating the Distinctive Range of

COSMOPOLITAN.	EXTRATROPICAL.	TROPICAL AND SUBTROPICAL.
Typhaceae		
	Sparganiaceae	
Potamogetonaceae		
Najadaceae		
	Juncagineae	
Alismaceae		
Hydrocharitaceae		
Gramineae		
Cyperaceae		
		Aroideae
Lemnaceae		
		Xyridaceae
		Eriocaulaceae
		Commelinaceae
Pontederiaceae		
Juncaceae		
Liliaceae		
		Amaryllidaceae
	Dioscoreaceae	
Iridaceae		
Orchidaceae		Orchidaceae
Myricaceae		
Salicaceae		
	Betulaceae	
	Urticaceae	
		Moraceae
Santalaceae		
Aristolochiaceae		
Polygonaceae		
Chenopodiaceae		
Amarantaceae		
		Phytolaccaceae
		Nyctaginaceae
Portulacaceae		
Caryophyllaceae		
Nymphaeaceae		
Ceratophyllaceae		
Ranunculaceae		
		Menispermaceae
	Papaveraceae	Papaveraceae
Cruciferae		
		Capparidaceae
Droseraceae		
	Crassulaceae	Crassulaceae
	Saxifragaceae	
Rosaceae		
Leguminosae		
	Geraniaceae	
	Oxalidaceae	Oxalidaceae
Linaceae		
	Rutaceae	
Polygalaceae		
Euphorbiaceae		

Families Represented in the Minnesota Valley.

NORTHERN EXTRATROPICAL.	WESTERN HEMISPHERE	NORTH AMERICAN.
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	Pontederiaceae	...
...	...	...
...	...	...
...	...	...
...	Dioscoreaceae	...
...	...	...
...	...	...
Juglandaceae	...	...
...	...	...
...	...	...
Betulaceae	...	...
Fagaceae	...	...
Ulmaceae	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	Nyctaginaceae	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
Berberidaceae	Berberidaceae	...
...	...	...
Papaveraceae	...	...
...	...	...
...	...	...
...	Sarraceniaceae	Sarraceniaceae
...	...	...
Crassulaceae	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...
...	...	...

A. Table Illustrating the Distinctive Range of Fam-

COSMOPOLITAN.	EXTRATROPICAL.	TROPICAL AND SUBTROPICAL.
	Stellariaceae	
		Anacardiaceae
Celastraceae		
Aquifoliaceae		
	Staphyleaceae	
	Balsaminaceae	
	Rhamnaceae	Rhamnaceae
Vitaceae		
Tiliaceae		
Malvaceae		
Hypericaceae		
Violaceae		
		Cactaceae
Thymelaeaceae		
		Lythraceae
	Oenotheraceae	
Halorrhagidaceae		
Araliaceae		Araliaceae
Umbelliferae		
	Cornaceae	
Ericaceae	Ericaceae	
Oleaceae		Oleaceae
Gentianaceae		
		Apocynaceae
		Asclepiadaceae
Convolvulaceae		
Borraginaceae		
		Verbenaceae
Labiatae		
		Solanaceae
Scrophulariaceae		
Lentibulariaceae		
		Orobanchaceae
Plantaginaceae		
Rubiaceae		Rubiaceae
		Caprifoliaceae
Valerianaceae		
		Cucurbitaceae
Campanulaceae		
Compositae		

ilies Represented in the Minnesota Valley.—*Continued.*

NORTHERN EXTRATROPICAL.	WESTERN HEMISPHERE	NORTH AMERICAN.
Staphyleaceae		
Aceraceae		
Balsaminaceae		
Cistaceae		
	Cactaceae	
Elaeagnaceae		
	Lythraceae	
Umbelliferae		
Pirolaceae		
Primulaceae		
	Polemoniaceae	
	Hydrophyllaceae	Hydrophyllaceae
Caprifoliaceae		
Adoxaceae		

From the facts of distribution compiled above it is possible to present the following numerical statistics.

2. Statistics of Families.—Numerical.

	No. in world.	No. in valley.	No. Cosmopolitan.	No. Extratropical.	No. tropical and subtropical.	No. W. Hemisphere	No. N. extratropical.	No. N. American.
Monocotyledones	43	21	13	3	6	2	0	0
Archichlamydeæ	131	60	29	14	13	5	13	1
Metachlamydeæ	48	25	13	1	9	2	4	1
Totals	222	106	55	18	28	9	17	2

The significance of the above figures will not be fully apprehended unless the various percentages are kept in mind. To put these before the eye in a separate table will perhaps be useful. In the following tabulation the relation of the various range-elements to the taxonomic groups and the analysis of each taxonomic group according to range are presented. Such a table indicates more exactly than the one previously constructed just what influence may be credited to the different taxonomic groups in the general distribution of the families.

3. Statistics of Families.—Percentages.

	Per cent. of all cosmop. in valley.	Per cent. of all extratropical.	Per cent. of trop. and subtropical.	Per cent. of W. Hem	Per cent. of N. extratropical.	Per cent. of N. American.	Co mop. per cent. of each.	Extratrop. per cent of each.	Trop. and subtrop per cent. of each.	W Hemisphere per cent. of each.	N. Extratrop. per cent. of each.	N. American per cent. of each.
Monocotyledones	23.6	16.6	21.4	22.2	0.0	0 0	61.9	14.2	28.5	9 5	0.0	0.0
Archichlamydeæ	52.7	77.7	46.4	55.5	76.4	50.0	48.3	23.3	21.6	8.3	21.6	1.8
Metachlamydeæ	23.6	5.5	32.1	22.2	23.5	50.0	52 0	4.0	36.0	8.0	16.0	4.0

Examination of the two tabulations preceding will serve to indicate the principal characters, by families, of the metaspermic population of the Minnesota valley. Of the 106 families, 55 are of cosmopolitan range, 90 are extratropical, 83 tropical. Of the 90 extratropical families, 55 are also in the tropics, while of the 83 tropical, 55 are also in the extratropical regions. Of the 90 extratropical, 18 are extratropical in both northern and southern hemispheres, while 17 are extratropical only in the northern hemisphere. The character of the families represented in the valley may then be summed up as generally extratropical, modified by tropical. The families indicate that the Minnesota valley is first of all an extratropical region. For their number, the Metachlamydeae contribute the most of the distinctively tropical modification, and the Archichlamydeae the least. For their number, the Monocotyledones contribute the most of the distinctively cosmopolitan element and the least of the endemic. For their number the Archichlamydeae contribute the most of the distinctively extratropical modification. These facts are in unison with the notion that the Metachlamydeae, as a group, are the most recent, and the Monocotyledones, as a group, the most ancient. The Monocotyledones having had a longer time of development have become more widely scattered and their families are therefore more generally cosmopolitan. Of the total monocotyledonous families in the valley 61.9 per cent. are of cosmopolitan range, while only 48.3 per cent. of the archichlamydeous families are of such range. Thus in the distribution of its families we find the Minnesota valley adds to the evidence already derived from other sources—that the Metachlamydeae are comparatively recent and the Monocotyledones comparatively early in their respective emergences.

The archichlamydeous families are *par excellence* the extratropical families. Of all distinctively extratropical families represented in the valley they form the large percentage of 77.7—the largest percentage in the table. And of the northern extratropical they form 76.4 per cent. For their number, too, they are equally conspicuous as distinctively extratropical. In the three great taxonomic divisions, then, we find three marked distributional characters peculiar to the families. The older group of the Monocotyledones is distinguished for the cosmopolitan range of its families; the younger group of the Archichlamydeae is distinguished for the extratropical range of its families, while the youngest group, the Metachlamydeae, is characterised by its tropical and subtropical range. The metachlamydeous plants, then, of the Minnesota valley belong to families, in general more centrally than distally located on the surface of the earth; the archichlamydeous plants belong to families, in general more distally than centrally located, and the monocotyledonous plants belong to families, in general widely dispersed over both distal and central regions. Monocotyledones and Metachlamydeae, therefore, characterise the central family-element of the Minnesota valley, and Monocotyledones and Archichlamydeae the distal family-element of the valley. This seems to be the most useful generalisation that can be made from the statistics of families.

II. EXAMINATION OF GENERA REPRESENTED IN THE MINNESOTA VALLEY.

The total number of genera represented in the valley of the Minnesota is 407. Of these 105 or 25.8 per cent. are monocotyledonous; 174 or 42.7 per cent. are archichlamydeous; and 128 or 31.2 per cent. are metachlamydeous. The following table presents these points in a condensed form.

4. Representation of Genera.

	No. of gen.	Per ct. of all gen. in val.	Average no. of gen. per family.
Monocotyledones	105	25.8	5.00
Archichlamydeae....	174	42.7	2.90
Metachlamydeae...........	128	31.2	5.12
Total no. of genera	407	....	Gen. average no. per family, 3 84.

B. Table Illustrating the Distinctive Range of

COSMOPOLITAN.	EXTRATROPICAL.	TROPICAL AND SUBTROPICAL.
Typha		
Potamogeton		
Zanichellia		
Najas		
	Triglochin	
Alisma		
Sagittaria		
		Vallisneria
Andropogon		
Panicum		
		Cenchrus
		Homalocenchrus
	Phalaris	
Hierochloë		
		Aristida
Stipa		

It is possible also to pursue a line of investigation in regard to these 407 genera precisely similar to that which was followed out for the 106 families that are represented in the valley of the Minnesota. As before, in order to analyse the general ranges, we may group the genera under the same six divisions that were established for the families, namely:

A. Cosmopolitan genera.
B. Extratropical genera.
C. Tropical and subtropical genera.
D. Northern extratropical genera.
E. Western Hemisphere genera.
F. North American genera.

The grouping of the genera under these heads is with the same reservations as in the case of the families. As before, it may be necessary to enter the same genus under more than one head. The number of species developed in any genus is considered to furnish the best index of its relative preponderance in one locality rather than another. Where, then, the species are particularly numerous in extratropical regions and fewer in tropical regions, the genus is in general set down as extratropical, and similarly in the other cases. To indicate the distinctive range of the genera represented in the Minnesota valley is the purpose of the following table:

Genera Represented in the Minnesota Valley.

NORTHERN EXTRATROPICAL.	WESTERN HEMISPHERE.	NORTH AMERICA.
Sparganium		
Scheuchzeria		
	Elodea	
	Zizania	
Homalocenchrus		

B. Table Illustrating the Distinctive Range of

COSMOPOLITAN.	EXTRATROPICAL.	TROPICAL AND SUBTROPICAL.
	Oryzopsis	
	Muhlenbergia	
Agrostis	Agrostis	
	Deyeuxia	
Deschampsia		
	Avena	
Danthonia		
Spartina		
Phragmites		
Eragrostis		Eragrostis
	Koeleria	
Poa		
Festuca	Festuca	
Bromus	Bromus	
	Agropyrum	
	Hordeum	
	Elymus	
	Hystrix	
Hemicarpha		
Cyperus		
Scirpus		
		Heleocharis
Iria		
Mariscus		
		Rhyncospora
		Scleria
	Carex	
Lemna		
Grantia		
		Xyris
Eriocaulon		
Heteranthera		
Juncus		
Cyperella		

Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN EXTRATROPICAL.	WESTERN HEMISPHERE.	NORTH AMERICA.
	Muhlenbergia	
		Brachyelytrum
Alopecurus		
	Sporobolus	
Cinna		
Ammophila		
		Schedonnardus
	Bouteloua	
Beckmannia		
		Bulbilis
		Eatonia
Scolochloa		
Panicularia		
		Dulichium
Eriophorum		
Heleocharis		
Acorus		
Spathyema		
Calla		
Arisaema		
	Xyris	
	Tradescantia	
	Pontederia	
Tofieldia		
		Zigadenus
		Melanthium
Veratrum		

B. Table Illustrating the Distinctive Range of

COSMOPOLITAN.	EXTRATROPICAL.	TROPICAL AND SUBTROPICAL.
		Smilax
		Hypoxis
		Dioscorea
		Iris
		Sisyrinchium
	Cypripedilum	
Habenaria		Habenaria
Pogonia		
Gyrostachys		
		Achroanthes
Leptorchis		
Salix		
Myrica		
	Alnus	
Quercus		
Celtis		
	Urtica	
		Laportea
		Adicea
		Ramium
	Parietaria	
Aristolochia		
		Rumex
Polygonum		
Chenopodium		
Salsola		
		Froelichia
		Amaranthus

Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN EXTRATROPICAL.	WESTERN HEMISPHERE	NORTH AMERICA.
		Uvularia
Allium		
Lilium		
		Erythronium
		Camassia
Clintonia		
Unifolium		
Polygonatum		
		Medeola
		Trillium
Iris		
	Sisyrinchium	
Orchis		
Arethusa		
Peramium		
Achroanthes		
Corallorhiza		
		Cathea
		Aplectrum
Juglans		
		Scoria
Populus		
Carpinus		
Ostrya		
Corylus		
Betula		
Ulmus		
Morus		
Humulus		
	Adicea	
Comandra		
Asarum		
Rumex		
Corispermum		
		Acnide
	Froelichia	

B. Table Illustrating the Distinctive Range of

COSMOPOLITAN.	EXTRATROPICAL.	TROPICAL AND SUBTROPICAL.
Phytolacca		
		Talinum
		Portuluca
Silene		
	Stellularia	
Nelumbo		
Brasenia		
	Leuconymphaea	
Ceratophyllum		
	Caltha	
	Anemone	
Clematis		
Ranunculus		
	Thalictrum	
	Neckeria	
Lepidium		
	Sisymbrium	
Nasturtium		
	Cardamine	
	Draba	
	Arabis	
		Cleome
		Jacksonia
Drosera		

Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN EXTRATROPICAL.	WESTERN HEMISPHERE	NORTH AMERICA.
	Mirabilis	
	Talinum	
Claytonia		
Cerastium		
Moehringia		
		Anychia
Nymphaea		
Hydrastis		
Isopyrum		
Actaea		
Aquilegia		
Delphinium		
Oxygraphis		
Podophyllum		
Leontice		
Menispermum		
		Sanguinaria
Capnorchis		
Neckeria		
		Thelypodium
Barbarea		
		Lesquerella
Arabis		
Erysimum		
		Sarracenia
Penthorum		
Saxifraga		
Tiarella		
		Heuchera
Mitella	Mitella	
Chrysosplenium		
Parnassia		
Opulaster		
Spiraea		
Pirus		
Amelanchier		
Crataegus		

B. Table Illustrating the Distinctive Range of

COSMOPOLITAN.	EXTRATROPICAL.	TROPICAL AND SUBTROPICAL.
Rubus		
	Fragaria	
		Rosa
	Agrimonia	
		Cerasus
		Acuania
Cassia		
Lupinus		
Lotus		
Psoralea		
		Dalea
		Cracca
		Astragalus
Glycyrrhiza		
Pleurolobus		
Lespedeza		
	Vicia	
	Lathyrus	
Phaseolus		
	Geranium	
Oxalis		
Linum		
		Zanthoxylum
Polygala		
		Ricinocarpus
Euphorbia		Euphorbia
	Stellaria	
	Rhus	
		Evonymus
Celastrus		
Ilex		
		Acer
	Impatiens	
	Vitis	
	Malva	
		Hibiscus
Hypericum		
	Viola	

Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN EXTRATROPICAL.	WESTERN HEMISPHERE	NORTH AMERICA.
Fragaria		
Potentilla		
Geum		
Rosa		
Cerasus		
Prunus		
	Acuania	
Gymnocladus		
Dalea		
		Kuhnistera
Astragalus		
		Amorpha
Spiesia		
Apios		
Falcata		
		Baptisia
		Ptelea
Evonymus		
Staphylea		
Acer		
		Ceanothus
Rhamnus		
Parthenocissus		
Tilia		
		Napaea
Helianthemum		
		Hudsonia
Opuntia		Opuntia

B. Table Illustrating the Distinctive Range of

COSMOPOLITAN.	EXTRATROPICAL.	TROPICAL AND SUBTROPICAL.
Elaeagnus		
Lythrum		
Isnardia		
	Epilobium	
		Oenothera
Hippuris		
Myriophyllum		
		Aralia
	Sanicula	
Eryngium		
Peucedanum		
	Angelica	
Pimpinella		
		Cicuta
	Sium	
	Myrrhis	
	Cornus	
		Pirola
	Vaccinium	
	Steironema	
Centunculus		
Fraxinus		
Nymphodes		
Gentiana		
Asclepias		
Volvulus		
Cuscuta		
	Polemonium	

Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN EXTRATROPICAL.	WESTERN HEMISPHERE	NORTH AMERICA.
		Dirca
		Leptargyraia
		Gaura
Circaea		
	Oenothera	
Aralia		
		Polytaenia
Heracleum		
		Tiedemannia
		Thaspium
		Zizia
Cicuta		
Deeringia		
Pseva		
Pirola		
Monotropa		
Ledum		
Andromeda		
Lyonia		
Chiogenes		
Oxycoccus		
		Arctostaphylos
Aretia		
Lysimachia		
	Steironema	
Trientalis		
Menyanthes		
Apocynum		
		Phlox
	Collomia	
		Macrocalyx
		Hydrophyllum
	Phacelia	
		Onosmodium
Lithospermum		

B. Table Illustrating the Distinctive Range of

COSMOPOLITAN.	EXTRATROPICAL	TROPICAL AND SUBTROPICAL.
	Myosotis	
	Lappula	
Cynoglossum		
Teucrium		
Mentha		
Brunella		
Scutellaria		
Stachys		
		Physalis
		Solanum
	Mimulus	
Gratiola		
		Ilysanthes
	Veronica	
	Monniera	
Utricularia		
Plantago		
Galium		
Lonicera		
	Sambucus	
Viburnum		
Valeriana		
	Sicyos	
Lobelia		
Vernonia		
Eupatorium		

Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN EXTRATROPICAL.	WESTERN HEMISPHERE	NORTH AMERICA.
....	....	....
....	....	....
....	....	....
Leptostachya........	....	....
Verbena........	Verbena	....
....	....	....
....	....	Isanthus........
....	....	....
Lycopus	....	....
....	....	Koellia ....
Acinos........	....	....
....	Hedeoma........	....
....	....	Monarda........
Vleckia........	....	....
Dracocephalum	....	....
....	....	Physostegia........
....	....	....
....	....	....
....	....	....
....	....	....
....	....	....
Scrophularia........	....	....
....	....	Chelone........
....	....	Penstemon........
....	....	....
....	....	....
....	....	....
....	....	....
....	....	Synthyris........
....	Gerardia........	....
Castilleja........	....	....
Pedicularis	....	....
Melampyrum	....	....
....	....	....
....	....	....
....	....	Aphyllon ....
....	....	....
....	....	Houstonia ....
....	....	....
Linnaea........	....	....
....	....	Symphoricarpos ....
....	....	....
Diervilla........	....	....
Triosteum........	....	....
....	....	....
....	....	....
Adoxa	....	....
....	....	....
Valerianella	....	....
....	....	....
....	Micrampelis	....
Campanula	....	....
Pentagonia	....	....
....	....	....
....	....	....
....	....	....
....	....	Kuhnia........
....	....	Laciniaria........

B. Table Illustrating the Distinctive Range of

COSMOPOLITAN.	EXTRATROPICAL.	TROPICAL AND SUBTROPICAL.
		Boltonia
Aster		
Erigeron		
	Antennaria.	
		Anaphalis
Gnaphalium		
	Adenocaulon.	
		Ambrosia
Xanthium		
Coreopsis		
Bidens		
	Erechthites	
Artemisia		
Senecio		
	Cnicus	
	Lactuca	
		Taraxacum
		Crepis

The facts of distribution compiled in the foregoing tabulation will be better apprehended if presented separately, by groups, and such separation and grouping of the statistics is indicated in the following six tables. I have named the group of genera for which a distinctive range has been determined a "*generic element.*" The six generic elements of the preceding tabulation are now considered in succession. The numerical statistics and the two groups of percentage statistics are displayed side by side. The tables, then, show the number which each taxonomic group furnishes to the generic element, the percentage that this number is of the whole generic element and the percentage of the taxonomic group that may be considered as belonging to each generic element. These generic elements may

Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN EXTRATROPICAL.	WESTERN HEMISPHERE	NORTH AMERICA.
	Grindelia	
		Diplogon
		Solidago
	Haplopappus	
Boltonia		
Anaphalis		
	Polymnia	
		Silphium
	Parthenium	Parthenium
		Cyclachaena
Ambrosia		
	Heliopsis	
		Rudbeckia
	Helianthus	
		Helenium
	Gaillardia	
	Dyssodia	
Achillea		
Taraxacum		
		Nothocalais
	Agoseris	
		Adopogon
		Lygodesmia
Prenanthes		
Crepis		
Hieracium		

be examined in the same order that was adopted in the general tabulation.

5. The Cosmopolitan Generic Element.

	No. of genera.	Per cent. of all Cosmopolitan.	Cosmopolitan per cent. of each.
Monocotyledones	34	31.7	32.3
Archichlamydeae	42	39.2	24.0
Metachlamydeae	31	29.1	24.2
Total Cosmopolitan	107		
Cosmop. per cent of all genera	26.4		

From the table above it appears that the cosmopolitan genera of the Monocotyledones, form a larger percentage of the total Monocotyledones than do the cosmopolitan genera of the other two taxonomic groups. Passing to the extratropical genera, we find results similarly in line with those determined from the families.

6. The Extratropical Generic Element.

	No. of genera.	Per cent. of all Extratropical.	Extratropical per cent. of each.
Monocotyledones	16	26.0	15.2
Archichlamydeae.............	30	49.1	17.1
Metachlamydeae	15	24.5	11.7
Total Extratropical.........	61	....	....
Extratrop. per ct. of all genera	15.1	....	....

Here it is to be noted that the extratropical percentage of the Archichlamydeae exceeds the same percentage in the other taxonomic groups. Continuing with the tropical and subtropical element, the next table may be examined:

7. The Tropical and Subtropical Generic Element.

	No. of genera.	Per cent. of all Tropical and Subtropical.	Tropical and Subtropical per cent. of each.
Monocotyledones............	16	32.0	15.2
Archichlamydeæ.	25	50.0	14.8
Metachlamydeæ.............	9	18.0	7.0
Total Tropical and Subtrop	50	....	....
Tropical and Subtropical per cent. of all genera.	12.4	....	....

An interesting variation from the results of family-examination is apparent in the table above. In the central realm element the monocotyledonous influence is more distinct by genera than is the metachlamydeous. By families, it will be recollected, the reverse was the case. In the northern extratropical generic element the parallelism is resumed as appears in the next table.

8. Northern Extratropical Generic Element.

		Per cent. of all Northern Extratropical.	Northern Extratropical per cent. of each.
Monocotyledones...........	28	20.9	26.6
Archichlamydeae............	67	50.0	38.2
Metachlamydeae	39	29.1	30.4
Total North'n Extratropical	134	....	....
Northern Extratropical per cent. of all genera.........	33.1	....	....

In the above the Archichlamydeæ appear once more as distinctly extratropical, both numerically and by percentage.

The next tables indicate in a most convincing manner the juniority of the Metachlamydeæ. Both of these tables are in line with the tabulations of families which precede and those of species which are to follow.

9. Western Hemisphere Generic Element.

		Per cent. of all Western Hemisphere.	Western Hemisphere per cent. of each.
Monocotyledones....	9	28.1	8 5
Archichlamydeae...........	7	21.9	4.0
Metachlamydeae	16	50.0	12.5
Total Western Hemisphere	32	....	....
Western Hemisphere per ct.. of all genera.............	7.9	....	....

From the above the weak position of the Archichlamydeæ and the strong position of the Metachlamydeæ as furnishing sub-endemic genera is very apparent. Of the total group of metachlamydeous genera 12.5 per cent. are limited in their range to the western hemisphere. This percentage does not include, however, the results of the succeeding table, for in every case distinctive not total range, is given. This was explained above for the families. The last table of the series follows:

10. North American Generic Element.

		Per cent. of all North American.	North American per cent. of each.
Monocotyledones... ..	14	21.9	13.3
Archichlamydeae.. ..	23	35.9	13.1
Metachlamydeae......	27	43.2	13.2
Total North American	64	....	....
North American per cent. of all genera....	15.8	....	....

The figures of the last table indicate two facts concerning distribution, both of which are important. By the slight variation in the last column from the mean of 13.2 per cent. it will be seen that, so far as the valley of the Minnesota and its Metaspermae can be placed in evidence, there is about an equal tendency in each of the three taxonomic groups to develop endemic genera. The last column of figures serves to strengthen our belief that the Metachlamydeae are the youngest of the three groups, for while the opportunity for developing endemic genera is no better in this group than in the other two, we find upon examining the figures of the second column that the Metachlamydeae include by far the larger per cent. of the endemic genera. The apparent explanation of this fact by the different length of time that has sufficed for distribution in and out of the continent, in the case of the three groups of unequal age, is even more clearly developed by the evident inadmissibility of attributing this difference of range to any inherent quality of the groups in question.

An examination of the genera may also be conducted to determine the North American development of each. In the next table the genera are classified as northern, southern, eastern and western. Some explanation of this grouping may be necessary. Preponderance of species in one of the regions over the opposite region is taken as the index of range. The 95th meridian W. of Greenwich is adopted as the line dividing the eastern from the western half of the continent, and the 45th parallel of N. latitude as the line dividing the northern from the southern region. If then in a given genus a greater number of species occur north and east of the dividing lines than south and west, such a genus is entered as northern and eastern, in the table. No attempt at hairsplitting distinctions has been made, and genera developed pretty evenly in all parts of the continent are entered in each of the four groups. Very commonly a genus will be entered in three groups. The groups of three which are most common are the north-east-west, the south-east-west and north-south-east groups. It is believed that by such a comparatively elastic method of entry more accurate results will be obtained than if one were to attempt for each genus to strike such a demarcation line that it could fall into but two groups. Again, in the case of genera either monotypic or with very few species, the numerical test must be abandoned. In its place is adopted the specific range and the comparative frequency of individuals on different sides of the demarcation lines. From these considerations it will be seen that the north-south-east-west group of genera is of the most generally distributed genera while the south-east or north-east group and others of similar construction are the least generally developed in the North American continent. Large development of range may however, and often does, exist together with small development of species, or *vice versa*. With so much of emphasis upon the elasticity of grouping the table may be presented.

C. Table Illustrating Continental Development of Genera Represented in the Minnesota Valley.

<table>
<tr><th>NORTHERN.</th><th>SOUTHERN.</th><th>EASTERN.</th><th>WESTERN.</th></tr>
<tr><td colspan="4" align="center"><i>Typhaceae.</i></td></tr>
<tr><td>Typha</td><td>Typha</td><td>Typha</td><td>Typha</td></tr>
<tr><td colspan="4" align="center"><i>Sparganiaceae.</i></td></tr>
<tr><td>Sparganium</td><td></td><td>Sparganium</td><td>Sparganium</td></tr>
<tr><td colspan="4" align="center"><i>Potamogetonaceae.</i></td></tr>
<tr><td>Potamogeton</td><td></td><td>Potamogeton</td><td></td></tr>
<tr><td>Zanichellia</td><td>Zanichellia</td><td>Zanichellia</td><td>Zanichellia</td></tr>
<tr><td colspan="4" align="center"><i>Najadaceae.</i></td></tr>
<tr><td></td><td>Najas</td><td>Najas</td><td></td></tr>
<tr><td colspan="4" align="center"><i>Juncagineae.</i></td></tr>
<tr><td>Triglochin</td><td></td><td>Triglochin</td><td>Triglochin</td></tr>
<tr><td>Scheuchzeria</td><td></td><td>Scheuchzeria</td><td>Scheuchzeria</td></tr>
<tr><td colspan="4" align="center"><i>Alismaceae.</i></td></tr>
<tr><td>Alisma</td><td></td><td></td><td>Alisma</td></tr>
<tr><td></td><td>Sagittaria</td><td>Sagittaria</td><td></td></tr>
</table>

C. Table Illustrating Continental Development of Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN.	SOUTHERN.	EASTERN.	WESTERN.
	Hydrocharitaceae.		
Elodea		Elodea	Elodea
	Vallisneria	Vallisneria	
	Gramineae.		
	Andropogon	Andropogon	
	Panicum	Panicum	
	Cenchrus	Cenchrus	
	Zizania	Zizania	
	Homalocenchrus	Homalocenchrus	
	Phalaris	Phalaris	Phalaris
Hierochloë		Hierochloë	Hierochloë
	Aristida	Aristida	
Stipa			Stipa
Oryzopsis			Oryzopsis
	Muhlenbergia	Muhlenbergia	
Brachyelytrum	Brachyelytrum	Brachyelytrum	
Alopecurus			Alopecurus
	Sporobolus	Sporobolus	
	Cinna		Cinna
Agrostis			Agrostis
Deyeuxia			Deyeuxia
	Ammophila	Ammophila	
Deschampsia			Deschampsia
Avena		Avena	
	Danthonia	Danthonia	
	Spartina	Spartina	
	Schedonnardus		Schedonnardus
	Bouteloua	Boutelona	
Beckmannia	Beckmannia		Beckmannia
	Bulbilis	Bulbilis	
Phragmites	Phragmites	Phragmites	Phragmites
	Eragrostis	Eragrostis	
	Eatonia	Eatonia	
Koeleria		Koeleria	Koeleria
Poa		Poa	Poa
Scolochloa		Scolochloa	
Panicularia		Panicularia	
Festuca			Festuca
Bromus			Bromus
Agropyrum		Agropyrum	
Hordeum			Hordeum
Elymus		Elymus	
Hystrix		Hystrix	
	Cyperaceae.		
	Hemicarpha	Hemicarpha	Hemicarpha
	Dulichium	Dulichium	
	Cyperus	Cyperus	
Eriophorum		Eriophorum	
	Scirpus	Scirpus	
	Heleocharis	Heleocharis	
	Iria	Iria	
	Mariscus	Mariscus	Mariscus
	Rhyncospora	Rhyncospora	
	Scleria	Scleria	
Carex		Carex	
	Aroideae.		
Acorus		Acorus	
Spathyema		Spathyema	
Calla		Calla	
	Arisaema	Arismaea	
	Lemnaceae.		
	Lemna	Lemna	Lemna
	Grantia	Grantia	
	Xyridaceae		
	Xyris	Xyris	
	Eriocaulaceae.		
	Eriocaulon	Eriocaulon	
	Commelinaceae.		
	Tradescantia	Tradescantia	
	Pontederiaceae.		
	Pontederia	Pontederia	
	Heteranthera	Heteranthera	
	Juncaceae.		
Juncus		Juncus	Juncus
Cyperella		Cyperella	Cyperella

C. Table Illustrating Continental Development of Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN.	SOUTHERN.	EASTERN.	WESTERN.
	Liliaceae.		
	Tofieldia	Tofieldia	
	Zigadenus	Zigadenus	
Melanthium		Melanthium	
	Veratrum	Veratrum	
	Uvularia	Uvularia	
Allium			Allium
	Lilium		Lilium
Erythronium			Erythronium
Camassia		Camassia	Camassia
Clintonia		Clintonia	Clintonia
Unifolium		Unifolium	Unifolium
	Polygonatum	Polygonatum	
	Medeola	Medeola	
	Trillium	Trillium	
	Smilax	Smilax	
	Amaryllidaceae.		
	Hypoxis	Hypoxis	
	Dioscoreaceae.		
	Dioscorea	Dioscorea	
	Iridaceae.		
Iris	Iris	Iris	Iris
	Sisyrinchium		Sisyrinchium
	Orchidaceae.		
Cypripedium		Cypripedium	
Orchis		Orchis	
Habenaria		Habenaria	
	Pogonia	Pogonia	
Arethusa		Arethusa	
	Gyrostachys	Gyrostachys	
	Peramium	Peramium	
Achroanthes	Achroanthes	Achroanthes	
Leptorchis	Leptorchis	Leptorchis	
Corallorhiza			Corallorhiza
	Cathea	Cathea	
Aplectrum	Aplectrum	Aplectrum	
	Juglandaceae.		
	Juglans	Juglans	
	Scoria	Scoria	
	Myricaceae.		
	Myrica	Myrica	
	Salicaceae.		
Populus		Populus	
Salix			Salix
	Betulaceae.		
	Carpinus	Carpinus	
Ostrya	Ostrya	Ostrya	
Corylus		Corylus	
Betula		Betula	
Alnus			Alnus
	Fagaceae.		
	Quercus		Quercus
	Ulmaceae.		
	Ulmus	Ulmus	
Celtis	Celtis	Celtis	Celtis
	Moraceae.		
	Morus	Morus	
Humulus	Humulus	Humulus	Humulus
	Urticaceae.		
	Urtica		Urtica
	Laportea	Laportea	
	Adicea	Adicea	
	Ramium	Ramium	
	Parietaria	Parietaria	Parietaria
	Santalaceae.		
Comandra		Comandra	
	Aristolochiaceae.		
	Asarum	Asarum	Asarum
	Aristolochia	Aristolochia	
	Polygonaceae.		
	Rumex		Rumex
Polygonum			Polygonum
	Chenopodiaceae.		
Chenopodium			Chenopodium
Corispermum			Corispermum
	Salsola	Salsola	

C. Table Illustrating Continental Development of Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN.	SOUTHERN.	EASTERN.	WESTERN.
	Amarantaceae.		
	Acnide	Acnide	
	Froelichia	Froelichia	
	Amaranthus		Amaranthus
	Phytolaccaceae.		
	Phytolacca	Phytolacca	
	Nyctaginaceae.		
	Mirabilis	Mirabilis	
	Portulacaceae.		
	Talinum		Talinum
Claytonia			Claytonia
	Portulaca	Portulaca	
	Caryophyllaceae.		
Silene			Silene
Stellularia			Stellularia
Cerastium			Cerastium
Moehringia			Moehringia
	Anychia	Anychia	
	Nymphaeaceae.		
	Nelumbo	Nelumbo	
	Brasenia	Brasenia	
	Leuconymphaea	Leuconymphaea	
Nymphaea		Nymphaea	
	Ceratophyllaceae.		
	Ceratophyllum	Ceratophyllum	Ceratophyllum
	Ranunculaceae.		
Hydrastis		Hydrastis	
Caltha		Caltha	Caltha
Isopyrum			Isopyrum
Actaea		Actaea	Actaea
Aquilegia			Aquilegia
	Delphinum		Delphinum
Anemone		Anemone	
	Clematis	Clematis	
Oxygraphis			Oxygraphis
Ranunculus			Ranunculus
Thalictrum		Thalictrum	
	Berberidaceae.		
	Podophyllum	Podophyllum	
Leontice		Leontice	
	Menispermaceae.		
Menispermum		Menispernum	
	Papaveraceae.		
Sanguinaria		Sanguinaria	
Capnorchis			Capnorchis
Neckeria			Neckeria
	Cruciferae.		
	Thelypodium		Thelypodium
	Lepidium		Lepidium
Sisymbrium			Sisymbrium
Barbarea		Barbarea	Barbarea
	Nasturtium	Nasturtium	
Cardamine			Cardamine
	Lesquerella		Lesquerella
Draba			Draba
Arabis			Arabis
Erysimum			Erysimum
	Capparidaceae.		
	Cleome		Cleome
	Jacksonia		Jacksonia
	Sarraceniaceae.		
	Sarracenia	Sarracenia	
	Droseraceae.		
	Drosera	Drosera	
	Crassulaceae.		
	Penthorum	Penthorum	
	Saxifragaceae.		
Saxifraga			Saxifraga
Tiarella			Tiarella
Mitella			Mitella
Heuchera			Heuchera
	Chrysosplenium	Chrysosplenium	
Parnassia		Parnassia	
Ribes			Ribes

C. Table Illustrating Continental Development of Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN.	SOUTHERN.	EASTERN.	WESTERN.
	Rosaceae.		
Opulaster		Opulaster	Opulaster
Spiraea		Spiraea	Spiraea
Pirus		Pirus	
Amelanchier		Amelanchier	
	Crataegus	Crataegus	
Rubus		Rubus	
Fragaria			Fragaria
Potentilla			Potentilla
Geum		Geum	
	Agrimonia	Agrimonia	
	Rosa	Rosa	
	Prunus	Prunus	
	Cerasus	Cerasus	
	Leguminosae.		
	Acuania		Acuania
	Cassia	Cassia	
	Gymnocladus	Gymnocladus	
	Lupinus		Lupinus
	Lotus		Lotus
	Psoralea		Psoralea
	Dalea		Dalea
	Kuhnistera		Kuhnistera
	Amorpha		Amorpha
	Cracca	Cracca	
Astragalus			Astragalus
Spiesia			Spiesia
	Glycyrrhiza	Glycyrrhiza	
	Pleurolobus	Pleurolobus	
	Lespedeza	Lespedeza	
	Vicia	Vicia	
	Lathyrus		Lathyrus
	Apios	Apios	
	Phaseolus	Phaseolus	
	Falcata	Falcata	
	Baptisia	Baptisia	
	Geraniaceae.		
	Geranium		Geranium
	Oxalidaceae		
	Oxalis	Oxalis	
	Linaceae.		
	Linum		Linum
	Rutaceae.		
	Zanthoxylum	Zanthoxylum	
	Ptelea	Ptelea	
	Polygalaceae.		
	Polygala	Polygala	
	Euphorbiaceae.		
	Ricinocarpus	Ricinocarpus	
	Euphorbia	Euphorbia	
	Stellariaceae.		
	Stellaria		Stellaria
	Anacardiaceae.		
	Rhus	Rhus	
	Celastraceae.		
	Evonymus		Evonymus
	Celastrus	Celastrus	Celastrus
	Aquifoliaceae.		
	Ilex	Ilex	
	Staphyleaceae.		
	Staphylea	Staphylea	Staphylea
	Aceraceae.		
Acer		Acer	
	Balsaminaceae.		
	Impatiens	Impatiens	
	Rhamnaceae.		
	Ceanothus		Ceanothus
Rhamnus		Rhamnus	Rhamnus
	Vitaceae.		
	Parthenocissus	Parthenocissus	
	Vitis	Vitis	
	Tiliaceae.		
	Tilia	Tilia	
	Malvaceae.		
	Malva		Malva
	Napaea	Napaea	
	Hibiscus	Hibiscus	

C. Table Illustrating Continental Development of Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN.	SOUTHERN.	EASTERN.	WESTERN.
	Cistaceae.		
	Helianthemum	Helianthemum	
Hudsonia		Hudsonia	
	Hypericaceae.		
	Hypericum	Hypericum	
	Violaceae.		
Viola		Viola	
	Cactaceae.		
	Opuntia		Opuntia
	Thymelaeaceae.		
	Dirca	Dirca	Dirca
	Elaeagnaceae.		
	Leptargyraia	Leptargyraia	Leptargyraia
Elaeagnus			Elaeagnus
	Lythraceae.		
	Lythrum	Lythrum	
	Oenotheraceae.		
	Isnardia	Isnardia	
	Gaura		Gaura
Epilobium			Epilobium
Circaea		Circaea	
	Oenothera		Oenothera
	Halorrhagidaceae.		
Hippuris		Hippuris	
	Myriophyllum	Myriophyllum	
	Araliaceae.		
	Aralia	Aralia	
	Umbelliferae.		
Sanicula			Sanicula
	Eryngium	Eryngium	
	Polytaenia		Polytaenia
Heracleum			Heracleum
Peucedanum	Peucedanum		Peucedanum
	Tiedemannia	Tiedemannia	
Angelica			Angelica
	Thaspium	Thaspium	
	Zizia	Zizia	
	Pimpinella	Pimpinella	Pimpinella
	Cicuta	Cicuta	Cicuta
	Sium		Sium
	Deeringia	Deeringia	
	Myrrhis		Myrrhis
	Cornaceae.		
Cornus		Cornus	
	Pirolaceae.		
Pseva		Pseva	
Pirola		Pirola	Pirola
Monotropa			Monotropa
	Ericaceae.		
Ledum		Ledum	
Andromeda		Andromeda	Andromeda
	Lyonia	Lyonia	
Chiogenes		Chiogenes	
Arctostaphylos			Arctostaphylos
Oxycoccus		Oxycoccus	
Vaccinium		Vaccinium	
	Primulaceae.		
Androsace			Androsace
	Lysimachia	Lysimachia	
	Steironema	Steironema	
	Trientalis	Trientalis	Trientalis
	Centunculus	Centunculus	
	Oleaceae.		
	Fraxinus	Fraxinus	
	Gentianaceae.		
Menyanthes			Menyanthes
	Nymphodes	Nymphodes	
Gentiana			Gentiana
	Apocynaceae.		
	Apocynum	Apocynum	Apocynum
	Asclepiadaceae.		
	Asclepias	Asclepias	
	Convolvulaceae.		
	Volvulus	Volvulus	
	Cuscuta	Cuscuta	

C. Table Illustrating Continental Development of Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN.	SOUTHERN.	EASTERN.	WESTERN.
	Polemoniaceae.		
	Phlox	Phlox	
Collomia			Collomia
Polemonium			Polemonium
	Hydrophyllaceae.		
	Macrocalyx		Macrocalyx
	Hydrophyllum	Hydrophyllum	
	Phacelia		Phacelia
	Boraginaceae.		
	Onosmodium	Onosmodium	
	Lithospermum	Lithospermum	
Myosotis		Myosotis	
Cynoglossum			Cynoglossum
	Verbenaceae.		
	Leptostachya	Leptostachya	
	Verbena	Verbena	
	Labiatae.		
Teucrium		Teucrium	Teucrium
	Isanthus	Isanthus	
Mentha		Mentha	Mentha
	Lycopus	Lycopus	
	Koellia	Koellia	
	Acinos	Acinos	
	Hedeoma	Hedeoma	
	Monarda	Monarda	
	Vleckia	Vleckia	
Dracocephalum			Dracocephalum
	Physostegia	Physostegia	
Brunella	Brunella	Brunella	Brunella
	Scutellaria	Scutellaria	
	Stachys		Stachys
	Solanaceae.		
	Physalis		Physalis
	Solanum	Solanum	
	Scrophulariaceae.		
Scrophularia			Scrophularia
	Chelone	Chelone	
Penstemon			Penstemon
	Mimulus	Mimulus	Mimulus
	Gratiola	Gratiola	
	Ilysanthes	Ilysanthes	
Veronica		Veronica	
	Synthyris		Synthyris
	Gerardia	Gerardia	
	Castilleja		Castilleja
Pedicularis			Pedicularis
Melampyrum			Melampyrum
	Monniera	Monniera	
	Lentibulariaceae.		
	Utricularia	Utricularia	
	Orobanchaceae.		
Aphyllon			Aphyllon
	Plantaginaceae.		
	Plantago	Plantago	Plantago
	Rubiaceae.		
	Houstonia		Houstonia
Galium		Galium	Galium
	Caprifoliaceae.		
Linnaea		Linnaea	Linnaea
Symphoricarpos			Symphoricarpos
Lonicera		Lonicera	
	Diervilla	Diervilla	
	Triosteum	Triosteum	
Sambucus			Sambucus
	Viburnum	Viburnum	
	Adoxaceae.		
Adoxa			Adoxa
	Valerianaceae.		
	Valeriana	Valeriana	
Valerianella		Valerianella	
	Cucurbitaceae.		
	Sicyos	Sicyos	
	Micrampelis		Micrampelis
	Campanulaceae.		
Campanula		Campanula	Campanula
	Pentagonia	Pentagonia	Pentagonia
	Lobelia	Lobelia	

C. Table Illustrating Continental Development of Genera Represented in the Minnesota Valley.—*Continued.*

NORTHERN.	SOUTHERN.	EASTERN.	WESTERN.
	Compositae.		
	Vernonia	Vernonia	
	Eupatorium	Eupatorium	
	Kuhnia		Kuhnia
	Laciniaria	Laciniaria	
	Grindelia		Grindelia
	Diplogon	Diplogon	
	Solidago	Solidago	
	Haplopappus		Haplopappus
	Boltonia	Boltonia	
	Aster	Aster	
Erigeron			Erigeron
Antennaria			Antennaria
Anaphalis		Anaphalis	Anaphalis
Gnaphalium			Gnaphalium
Adenocaulon			Adenocaulon
	Polymnia	Polymnia	
	Silphium	Silphium	
	Parthenium		Parthenium
	Cyclachaena		Cyclachaena
	Ambrosia		Ambrosia
Xanthium		Xanthium	Xanthium
	Heliopsis		Heliopsis
	Rudbeckia	Rudbeckia	
	Helianthus	Helianthus	
	Coreopsis	Coreopsis	
	Bidens	Bidens	
	Helenium		Helenium
	Gaillardia		Gaillardia
	Dyssodia		Dyssodia
Achillea			Achillea
	Erechthites	Erechthites	
Artemisia			Artemisia
	Senecio		Senecio
Cnicus			Cnicus
Lactuca		Lactuca	
	Taraxacum		Taraxacum
	Nothocalais		Nothocalais
	Agoseris		Agoseris
	Adopogon	Adopogon	
	Lygodesmia		Lygodesmia
	Prenanthes	Prenanthes	
Crepis			Crepis
Hieracium			Hieracium

From the preceding table, statistics may be compiled as from the table of general generic range. Four range-elements may be discovered in the genera of the Minnesota valley and the mutual relations of these range-elements to the taxonomic groups may be determined, as before, by percentages. The four range-elements are as follows:

A. The Northern generic element.
B. The Southern generic element.
C. The Eastern generic element.
D. The Western generic element.

Each of these may be examined in turn

11. The Northern Generic Element.

	No. of genera.	Per cent. of all Northern.	Northern per cent. of each.
Monocotyledones	50	30.6	47.6
Archichlamydeae	67	41.6	37.9
Metachlamydeae	46	28.2	35.9
Total Northern	163		
Northern per cent of all genera	39.9		

In the above the 47.6 per cent. of monocotyledonous genera that range north rather than south is interestingly in excess of the 37.9 per cent. of Archichlamydeae and the 35.9 per cent. of Metachlamydeae. In the following table the preponderant southern ranges of the two higher groups of Metaspermae is indicated.

12. The Southern Generic Element.

	No. of genera.	Per cent. of all Southern.	Southern per cent. of each.
Monocotyledones	62	24.3	59.0
Archichlamydeae	111	43.3	63.4
Metachlamydeae	81	31.8	63.2
Total Southern	254		
South'n per cent. of all genera	62.2		

The excess of southern over northern ranges is observed from both tables, preceding. The differences are greatest for the Metachlamydeae, between 35.9 per cent. and 63.2 per cent., and least for the Monocotyledones, between 47.6 per cent. and 59.0 per cent., respectively. This result is quite in keeping with the results previously obtained and indicates the greater cosmopolitan character of the Monocotyledones. Passing to the other two tables of this group we note the relation between eastern and western genera.

13. The Eastern Generic Element.

	No. of genera.	Per cent of all Eastern.	Eastern per ct. of each.
Monocotyledones	85	31.4	80.9
Archichlamydeae	107	39.6	61.1
Metachlamydeae..............	78	28.9	60.9
Total Eastern..............	270	....	....
Eastern per cent. of all genera	66.1	....	....

The third column of the table above furnishes the largest percentage figure of any of the tables. The 80.9 per cent. of eastern-ranging monocotyledonous genera indicates sufficiently the eastern preponderance of this taxonomic group, as represented in the valley of the Minnesota. The lower percentage of the Metachlamydeae will be understood better in connection with the following table:

14. The Western Generic Element.

	No. of genera.	Per cent. of all Western.	Western per cent. of each
Monocotyledones................	36	14.1	44.8
Archichlamydeae................	84	45.8	34.2
Metachlamydeae................	63	34.4	49.0
Total Western..................	183	....	....
Western per cent. of all genera .	44.8	... .	....

By a comparison of the two tables preceding it is noted that the differences are widest between the Monocotyledones, and narrowest between the Metachlamydeae. By genera, then, the Monocotyledones are most evenly distributed north and south while the Metachlamydeae are most evenly distributed east and west. The evident importance of this fact, thus determined, lies in the exact parallelism which it maintains with others derived above. The Metachlamydeae, being peculiarly the central and younger element, may be expected to mass themselves more distinctly in lines parallel with the general continental tension-line. The Monocotyledones, being peculiarly the older and more generally distributed element, may be expected to manifest dissipation over the different degrees of latitude. This they are found to manifest, so the relative development of the two groups is admirably exhibited by these data of comparative latitudinal and longitudinal distribution.

The total per cents. are of importance, too, as determining in a preliminary way the character of the Minnesota valley flora, so far as regards its North American distribution. We find that the relations are as follows:

Total Northern.....163	Northern per cent. of all genera....39.9
Total Southern......254	Southern per cent. of all genera....62.2
Total Eastern.......270	Eastern per cent. of all genera......66.1
Total Western......183	Western per cent. of all genera.....44.8

So far then as may be indicated by the genera of metaspermic plants, the valley of the Minnesota is much more eastern and southern in its character than northern or western. Although generally regarded as a northern district, it is seen to be least characterised by this range-element. While continentally central it is by no means botanically central, but is peculiarly an Atlantic coast and a southern region. The explanation of this may be deferred until the examination of the species-distribution has been completed.

III. EXAMINATION OF SPECIES REPRESENTED IN THE MINNESOTA VALLEY.

Since 73.0 per cent. of the species in the Minnesota valley native metaspermic flora are limited to the North American continent it will hardly be worth while to attempt any extended examination of them along the lines of Table A or Table B. The extra-continental element may be isolated for study and the remainder which will consist of the endemic species may be classified as were the genera in Table C. The area occupied by a species is, as De Candolle has shown, in general either circular or elliptical. The species which are found in the Minnesota metaspermic flora are without exception to be found also outside of the basin. Each species or variety occupies such an elliptical or circular area as may be peculiar to it. Sometimes this area will be almost coëxtensive with that of the continent; again it will be comparatively restricted. Of the first condition *Typha latifolia* is a good example; of the second *Synthyris houghtoniana* may be cited. In most cases, however, if the area of the species should be drawn on a map, such area would always be cut by one or both of the two median lines which have been established as dividing the continent into northern and southern, eastern and western portions. If, now, the two lines of 95° W. long. and 45° N. lat. chance to cut any specific area into four approximately equal areas, such a species may be entered in the tabulation as of north, east, south and west distribution. But if one of the areas is very distinctly less than the other three, or if two are much less than the opposite two, the species may be entered in three of the four, or in two of the four divisions. As in the case of the genera, when similarly tabulated, no very rigid circumscribing line has been drawn for any species, for in almost every case the absolute east, west, north or south limit of a species is only approximately determined. Where any doubt about preponderant range has been felt the species has been entered in both of the groups. The evident result is that

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Typhaceac.	
Typha latifolia	Typha latifolia
Sparganiaceae.	
Sparganium simplex	
Sparganium androcladum	Sparganium androcladum
Sparganium eurycarpum	Sparganium eurycarpum
Potamogetonaceae.	
Potamogeton natans	Potamogeton natans
Potamogeton fluitans	Potamogeton fluitans
Potamogeton amplifolius	Potamogeton amplifolius
Potamogeton perfoliatus	Potamogeton perfoliatus
Potamogeton heterophyllos	
Potamogeton gramineus var. zizii	Potamogeton gramineus var. zizii
Potamogeton rutilus	
	Potamogeton illinoensis
Potamogeton pectinatus	Potamogeton pectinatus
Potamogeton pusillus	Potamogeton pusillus
Potamogeton lucens	Potamogeton lucens

the final differences, numerical and percentage, are produced rather by the unequal entry of species regarding the preponderant range, of which there is little question, while those which are entered as both north and south, as both east and west, or as all four, by adding to two columns equally do not alter the general averages In this way I have thought to give a more accurate account of the range of Minnesota valley Metaspermae, outside of the valley, than by any effort to strike a ratio of preponderance for every species and variety. The areas have been drawn on a map, in most cases, before their description was attempted. The limiting lines for the areas were derived from the range-descriptions compiled for each species in the body of the list. It cannot but be apparent how numerous and insidious are the opportunities for error in this list. To test the probable range of error the writer has, at considerable intervals, compiled the table three different times. The three tables were different, but the average range of variation from the mean, for all statistics was but 1.88 per cent., so it is believed that the table, as finally presented, is of approximate accuracy.

of Minnesota Valley Metaspermic Species.

EASTERN.	WESTERN.
Typh	*aceae.*
Typha latifolia	Typha latifolia
Sparga	*niaceae.*
Sparganium simplex	Sparganium simplex
Sparganium androcladum	Sparganium androcladum
Sparganium eurycarpum	
Potamog	*etonaceae.*
Potamogeton natans	Potamogeton natans
Potamogeton fluitans	Potamogeton fluitans
Potamogeton amplifolius	Potamogeton amplifolius
Potamogeton perfoliatus	
Potamogeton heterophyllos	Potamogeton heterophyllos
Potamogeton gramineus var. zizii	
Potamogeton rutilus	Potamogeton rutilus
Potamogeton illinoensis	
Potamogeton pectinatus	Potamogeton pectinatus
Potamogeton pusillus	Potamogeton pusillus
Potamogeton lucens	Potamogeton lucens

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Potamogeton praelongus	
Potamogeton lanceolatus	Potamogeton lanceolatus
Potamogeton zosteraefolius	
Potamogeton foliosus	
Zanichellia palustris	Zanichellia palustris
Najadaceae.	
Najas flexilis	Najas flexilis
Juncagineae.	
Triglochin palustris	
Triglochin maritima	
Scheuchzeria palustris	
Alismaceae.	
Alisma plantago	
	Sagittaria rigida
	Sagittaria graminea
Sagittaria sagittaefolia	
Hydrocharitaceae.	
Elodea canadensis	Elodea canadensis
	Vallisneria spiralis
Gramineae.	
	Andropogon nutans
	Andropogon provincialis
	Andropogon scoparius
	Panicum crus-galli var. hispidum
	Panicum dichotomum
Panicum depauperatum	Panicum depauperatum
	Panicum scoparium
	Panicum latifolium
Panicum xanthophysum	
	Panicum virgatum
	Panicum nudum
Panicum capillare	Panicum capillare
	Cenchrus tribuloides
	Zizania aquatica
Homalocenchrus oryzoides	Homalocenchrus oryzoides
	Homalocenchrus virginicus
Phalaris arundinacea	
Hierochloë odorata var. fragrans	
	Aristida purpurea
Aristida basiramea	Aristida basiramea
Stipa spartea	Stipa spartea
Oryzopsis juncea	
Oryzopsis asperifolia	

of Minnesota Valley Metaspermic Species.

EASTERN.	WESTERN.
Potamogeton praelongus	Potamogeton praelongus
Potamogeton lanceolatus	Potamogeton lanceolatus
Potamogeton zosteraefolius	Potamogeton zosteraefolius
Potamogeton foliosus	Potamogeton foliosus
Zanichellia palustris	Zanichellia palustris
Najadaceae.	
Najas flexilis	Najas flexilis
Juncagineae.	
Triglochin palustris	Triglochin palustris
Triglochin maritima	Triglochin maritima
Scheuchzeria palustris	Scheucheria palustris
Alismaceae.	
Alisma plantago	Alisma plantago
Sagittaria rigida	
Sagittaria graminea	
Sagittaria sagittaefolia	Sagittaria sagittaefolia
Hydrocharitaceae.	
Elodea canadensis	Elodea canadensis
Vallisneria spiralis	
Gramineae.	
Andropogon nutans	
Andropogon provincialis	
Andropogon scoparius	
Panicum crus-galli var. hispidum	
Panicum dichotomum	Panicum dichotomum
Panicum depauperatum	
Panicum scoparium	Panicum scoparium
Panicum latifolium	
Panicum xanthophysum	
Panicum virgatum	
	Panicum nudum
Panicum capillare	Panicum capillare
Cenchrus tribuloides	Cenchrus tribuloides
Zizania aquatica	
Homalocenchrus oryzoides	Homalocenchrus oryzoides
Homalocenchrus virginicus	
Phalaris arundinacea	Phalaris arundinacea
Hierochloë odorata var. fragrans	Hierochloë odorata var. fragrans
	Aristida purpurea
	Aristida basiramea
	Stipa spartea
Oryzopsis juncea	Oryzopsis juncea
Oryzopsis asperifolia	Oryzopsis asperifolia

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN
Oryzopsis melanocarpa	Oryzopsis melanocarpa
	Muhlenbergia diffusa
	Muhlenbergia tenuiflora
	Muhlenbergia ambigua
	Muhlenbergia mexicana
Muhlenbergia racemosa	Muhlenbergia racemosa
	Muhlenbergia sobolifera
	Brachyelytrum aristosum
Alopecurus geniculatus var. aristulatus	Alopecurus geniculatus var. aristulatus
	Sporobolus cryptandrus
	Sporobolus heterolepis
	Sporobolus junceus
	Sporobolus depauperatus
Sporobolus cuspidatus	Sporobolus cuspidatus
	Sporobolus vaginaeflorus
	Sporobolus asper
Cinna arundinacea	Cinna arundinacea
Agrostis hiemalis	Agrostis hiemalis
Agrostis rubra var. alpina	Agrostis rubra var. alpina
Agrostis perennans	Agrostis perennans
Deyeuxia neglecta	
Deyeuxia canadensis	
	Ammophila longifolia
Deschampsia caespitosa	
Avena striata	
Danthonia spicata	Danthonia spicata
Spartina cynosuroides	Spartina cynosuroides
	Schedonnardus paniculatus
	Bouteloua curtipendula
	Bouteloua hirsuta
	Bouteloua oligostachya
Beckmannia erucaeformis	
	Bulbilis dactyloides
Phragmites phragmites	Phragmites phragmites
	Eragrostis pectinacea
	Eragrostis purshii
	Eragrostis eragrostis
	Eragrostis hypnoides
	Eatonia obtusata
Eatonia pennsylvanica	Eatonia pennsylvanica
Koeleria cristata	
Poa nemoralis	
Poa palustris	
Poa compressa	

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Oryzopsis melanocarpa	
Muhlenbergia diffusa	
Muhlenbergia tenuiflora	
	Muhlenbergia ambigua
Muhlenbergia mexicana	Muhlenbergia mexicana
Muhlenbergia racemosa	Muhlenbergia racemosa
Muhlenbergia sobolifera	
Brachyelytrum aristosum	
Alopecurus geniculatus var. aristulatus	Alopecurus geniculatus var. aristulatus
Sporobolus cryptandrus	Sporobolus cryptandrus
Sporobolus heterolepis	
Sporobolus junceus	
	Sporobolus depauperatus
Sporobolus cuspidatus	
Sporobolus vaginaeflorus	
Sporobolus asper	
Cinna arundinacea	Cinna arundinacea
Agrostis hiemalis	Agrostis hiemalis
Agrostis rubra var. alpina	Agrostis rubra var. alpina
Agrostis perennans	Agrostis perennans
	Deyeuxia neglecta
Deyeuxia canadensis	Deyeuxia canadensis
	Ammophila longifolia
Deschampsia caespitosa	Deschampsia caespitosa
Avena striata	Avena striata
Danthonia spicata	Danthonia spicata
Spartina cynosuroides	Spartina cynosuroides
	Schedonnardus paniculatus
Bouteloua curtipendula	Bouteloua curtipendula
	Bouteloua hirsuta
	Bouteloua oligostachya
	Beckmannia erucaeformis
	Bulbilis dactyloides
Phragmites phragmites	Phragmites phragmites
Eragrostis pectinacea	
Eragrostis purshii	Eragrostis purshii
Eragrostis eragrostis	Eragrostis eragrostis
Eragrostis hypnoides	
Eatonia obtusata	Eatonia obtusata
Eatonia pennsylvanica	Eatonia pennsylvanica
Koeleria cristata	Koeleria cristata
Poa nemoralis	Poa nemoralis
Poa palustris	Poa palustris
	Poa compressa

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Scolochloa arundinacea	
Panicularia fluitans	
Panicularia americana	
Panicularia nervata	Panicularia nervata
Panicularia elongata	
Panicularia canadensis	
	Festuca natans
Festuca ovina	Festuca ovina
	Festuca octoflora
	Bromus purgans
Bromus ciliatus	
Bromus kalmii	Bromus kalmii
Agropyrum caninum	Agropyrum caninum
Agropyrum violaceum	
Agropyrum glaucum var. occidentalis	
Hordeum nodosum	Hordeum nodosum
Hordeum jubatum	
	Elymus elymoides
	Elymus striatus
Elymus canadensis	Elymus canadensis
Elymus virginicus	Elymus virginicus
Hystrix hystrix	Hystrix hystrix
Cyperaceae.	
	Hemicarpha micrantha
Dulichium spathaceum	Dulichium spathaceum
	Cyperus speciosus
Cyperus strigosus	Cyperus strigosus
	Cyperus strigosus var. compressus
	Cyperus esculentus
	Cyperus erythrorhizos
	Cyperus filiculmis
Cyperus schweinitzii	
	Cyperus aristatus
	Cyperus diandrus
	Cyperus diandrus var. castaneus
Eriophorum virginicum	Eriophorum virginicum
Eriophorum gracile	
Eriophorum latifolium	
Eriophorum polystachion	
Eriophorum vaginatum	
Eriophorum cyperinum	
	Eriophorum lineatum

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
	Scolochloa arundinacea
Panicularia fluitans	Panicularia fluitans
Panicularia americana	Panicularia americana
Panicularia nervata	Panicularia nervata
Panicularia elongata	
Panicularia canadensis	
Festuca nutans	
Festuca ovina	Festuca ovina
Festuca octoflora	Festuca octoflora
Bromus purgans	
Bromus ciliatus	Bromus ciliatus
Bromus kalmii	
Agropyrum caninum	Agropyrum caninum
Agropyrum violaceum	
Agropyrum glaucum var. occidentalis	Agropyrum glaucum var. occidentalis
	Hordeum nodosum
	Hordeum jubatum
	Elymus elymoides
Elymus striatus	
Elymus canadensis	Elymus canadensis
Elymus virginicus	
Hystrix hystrix	
Cyperaceae.	
Hemicarpha micrantha	Hemicarpha micrantha
Dulichium spathaceum	Dulichium spathaceum
Cyperus speciosus	
Cyperus strigosus	Cyperus strigosus
Cyperus strigosus var. compressus	
Cyperus esculentus	Cyperus esculentus
Cyperus erythrorhizos	Cyperus erythrorhizos
Cyperus filiculmis	
Cyperus schweinitzii	
Cyperus aristatus	Cyperus aristatus
Cyperus diandrus	
Cyperus diandrus var. castaneus	Cyperus diandrus var. castaneus
Eriophorum virginicum	
Eriophorum gracile	Eriophorum gracile
Eriophorum latifolium	Eriophorum latifolium
Eriophorum polystachion	Eriophorum polystachion
Eriophorum vaginatum	Eriophorum vaginatum
Eriophorum cyperinum	
Eriophorum lineatum	Eriophorum lineatum

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Scirpus atrovirens	Scirpus atrovirens
Scirpus sylvaticus var. microcarpus	
Scirpus fluviatilis	
Scirpus lacustris	Scirpus lacustris
Scirpus triangularis	Scirpus triangularis
	Heleocharis wolfii
Heleocharis acicularis	Heleocharis acicularis
Heleocharis tenuis	Heleocharis tenuis
Heleocharis intermedia	Heleocharis intermedia
	Heleocharis acuminata
Heleocharis palustris	Heleocharis palustris
	Heleocharis palustris var. glaucescens
Heleocharis ovata	Heleocharis ovata
	Iria capillaris
	Mariscus mariscoides
Rhyncospora setacea	Rhyncospora setacea
Rhyncospora alba	Rhyncospora alba
	Scleria verticillata
	Scleria triglomerata
Carex sychnocephala	Carex sychnocephala
	Carex straminea
Carex stranimea var brevior	Carex straminea var. brevior
	Carex straminea var. mirabilis
Carex foenea	
Carex adusta	
Carex scoparia	Carex scoparia
Carex tribuloides	Carex tribuloides
Carex tribuloides var. cristata	Carex tribuloides var. cristata
Carex tribuloides var. bebbii	Carex tribuloides var. bebbii
Carex muskingumensis	Carex muskingumensis
Carex siccata	
Carex deweyana	Carex deweyana
Carex trisperma	
Carex tenuiflora	
Carex canescens	
Carex echinata var. radiata	Carex echinata var. radiata
	Carex cephalophora
Carex muhlenbergii	Carex muhlenbergia
Carex rosea	Carex rosea
Carex rosea var. radiata	Carex rosea var. radiata
Carex tenella	
Carex sartwellii	
Carex vulpinoidea	

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Scirpus atrovirens	Scirpus atrovirens
	Scirpus sylvaticus var. microcarpus
Scirpus fluviatilis	
Scirpus lacustris	Scirpus lacustris
Scirpus triangularis	Scirpus triangularis
	Heleochoris wolfii
Heleocharis acicularis	Heleocharis acicularis
Heleocharis tenuis	
Heleocharis intermedia	
Heleocharis acuminata	
Heleocharis palustris	Heleocharis palustris
Heleocharis palustris var. glaucescens	
Heleocharis ovata	Heleocharis ovata
Iria capillaris	Iria capillaris
Mariscus mariscoides	Mariscus mariscoides
Rhyncospora setacea	
Rhyncospora alba	Rhyncospora alba
Scleria verticillata	
Scleria triglomerata	
Carex sychnocephala	
Carex straminea	Carex straminea
Carex straminea var. brevior	
Carex straminea var. mirabilis	
Carex foenea	Carex foenea
Carex adusta	Carex adusta
Carex scoparia	
Carex tribuloides	Carex tribuloides
Carex tribuloides var. cristata	Carex tribuloides var. cristata
Carex tribuloides var. bebbii	
Carex muskingumensis	
Carex siccata	Carex siccata
Carex deweyana	Carex deweyana
Carex trisperma	
Carex tenuiflora	
Carex canescens	Carex canescens
Carex echinata var. radiata	Carex echinata var. radiata
Carex cephalophora	
Carex muhlenbergii	
Carex rosea	
Carex rosea var. radiata	
Carex tenella	Carex tenella
Carex sartwellii	Carex sartwellii
Carex vulpinoidea	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Carex gravida	Carex gravida
Carex gravida var. laxifolia	Carex gravida var. laxifolia
Carex teretiuscula	
Carex teretiuscula var. ramosa	
	Carex crus-corvi
Carex stipata	Carex stipata
	Carex conjuncta
Carex stenophylla	Carex stenophylla
Carex chordorhiza	
Carex polytrichoides	Carex polytrichoides
Carex pubescens	
Carex pennsylvanica	
Carex varia	Carex varia
Carex pedunculata	Carex pedunculata
Carex richardsoni	
Carex eburnea	
Carex aurea	
	Carex tetanica var. meadii
	Carex laxiflora
Carex flava var. viridula	
Carex crawei	Carex crawei
	Carex granularis
	Carex grisea
	Carex davisii
Carex gracillima	Carex gracillima
Carex arctata	Carex arctata
Carex castanea	
Carex longirostris	Carex longirostris
Carex limosa	
Carex magellanica	
Carex crinita	Carex crinita
Carex prasina	Carex prasina
Carex aquatilis	
Carex stricta	Carex stricta
Carex fusca	Carex fusca
Carex riparia	Carex riparia
Carex trichocarpa	Carex trichocarpa
Carex trichocarpa var. aristata	
Carex filiformis	
Carex filiformis var. lanuginosa	Carex filiformis var. lanuginosa
Carex houghtonii	
	Carex squarrosa
Carex pseudocyperus	
Carex pseudocyperus var. americana	Carex pseudocyperus var. americana

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Carex gravida	
Carex gravida var. laxifolia	
Carex teretiuscula	Carex teretiuscula
Carex teretiuscula var. ramosa	Carex teretiuscula var. ramosa
Carex crus-corvi	
Carex stipata	Carex stipata
Carex conjuncta	
	Carex stenophylla
Carex chordorhiza	
Carex polytrichoides	Carex polytrichoides
Carex pubescens	
Carex pennsylvanica	Carex pennsylvanica
Carex varia	Carex varia
Carex pedunculata	Carex pedunculata
Carex richardsoni	Carex richardsoni
Carex eburnea	Carex eburnea
Carex aurea	Carex aurea
Carex tetanica var. meadii	
Carex laxiflora	
Carex flava var. viridula	Carex flava var. viridula
Carex crawei	
Carex granularis	
Carex grisea	Carex grisea
Carex davisii	
Carex gracillima	
Carex arctata	Carex arctata
Carex castanea	
Carex longirostris	Carex longirostris
Carex limosa	Carex limosa
Carex magellanica	Carex magellanica
Carex crinita	
Carex prasina	
Carex aquatilis	Carex aquatilis
Carex stricta	
Carex fusca	Carex fusca
Carex riparia	
Carex trichocarpa	
Carex trichocarpa var. aristata	Carex trichocarpa var. aristata
Carex filiformis	Carex filiformis
Carex filiformis var. lanuginosa	Carex filiformis var. lanuginosa
Carex houghtonii	Carex houghtonii
Carex squarrosa	
Carex pseudocyperus	
Carex pseudocyperus var. americana	Carex pseudocyperus var. americana

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Carex hystricina	Carex hystricina
Carex schweinitzii	Carex schweinitzii
Carex lurida	Carex lurida
Carex retrorsa	
Carex tuckermanni	
Carex monile	Carex monile
Carex utriculata	Carex utriculata
Carex oligosperma	
Carex lupulina	Carex lupulina
	Carex lupulina var. longipedunculata
Carex intumescens	Carex intumescens
Carex pauciflora	
Aroideae.	
Acorus calamus	Acorus calamus
Spathyema foetida	
Calla palustris	
Arisaema triphyllum	Arisaema triphyllum
Lemnaceae.	
Lemna minor	Lemna minor
Lemna perpusilla	Lemna perpusilla
Lemna trisulca	Lemna trisulca
Lemna polyrhiza	Lemna polyrhiza
	Grantia columbiana
	Grantia brasiliensis
Xyridaceae.	
	Xyris flexuosa
Eriocaulaceae.	
Eriocaulon septangulare	
Commelinaceae.	
	Tradescantia virginica
Pontederiaceae.	
Pontederia cordata	Pontederia cordata
	Heteranthera dubia
Juncaceae.	
Juncus tenuis	Juncus tenuis
Juncus vaseyi	
Juncus balticus var littoralis	
Juncus filiformis	
Juncus effusus	Juncus effusus
Juncus nodosus var. genuinus	
	Juncus nodosus var. megacephalus
Juncus canadensis var. coarctatus	

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Carex hystricina	
Carex schweinitzii	
Carex lurida	
Carex retrorsa	Carex retrorsa
Carex tuckermanni	
Carex monile	Carex monile
Carex utriculata	Carex utriculata
Carex oligosperma	Carex oligosperma
Carex lupulina	
Carex lupulina var. longipedunculata	
Carex intumescens	
Carex pauciflora	Carex pauciflora
Aroideae.	
Acorus calamus	
Spathyema foetida	
Calla palustris	
Arisaema triphyllum	
Lemnaceae.	
Lemna minor	Lemna minor
Lemna perpusilla	
Lemna trisulca	Lemna trisulca
Lemna polyrhiza	Lemna polyrhiza
Grantia columbiana	
Grantia brasiliensis	
Xyridaceae.	
Xyris flexuosa	
Eriocaulaceae.	
Eriocaulon septangulare	
Commelinaceae.	
Tradescantia virginica	
Pontederiaceae.	
Pontederia cordata	
Heteranthera dubia	Heteranthera dubia
Juncaceae.	
Juncus tenuis	Juncus tenuis
Juncas vaseyi	Juncus vaseyi
Juncus balticus var. littoralis	
Juncus filiformis	Juncus filiformis
Juncus effusus	Juncus effusus
Juncus nodosus var. genuinus	Juncus nodosus var. genuinus
Juncus nodosus var. megacephalus	Juncus nodosus var. megacephalus
Juncus canadensis var. coarctatus	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Juncus canadensis var. longecaudatus.	Juncus canadensis var. longecaudatus.
	Juncus acuminatus var. legitimus
Cyperella campestris var. multiflora	Cyperella campestris var. multiflora
Liliaceae.	
Tofieldia glutinosa	
Zigadenus elegans	Zigadenus elegans
	Melanthium virginium
Veratrum viride	
	Uvularia grandiflora
	Uvularia perfoliata
Uvularia sessilifolia	Uvularia sessilifolia
	Allium canadense
Allium stellatum	Allium stellatum
Allium cernuum	
Allium schoenoprasum	
Allium tricoccum	Allium tricoccum
	Lilium canadense
	Lilium superbum
Lilium philadelphicum	Lilium philadelphicum
Erythronium albidum	Erythronium albidum
	Erythronium americanum
	Camassia fraseri
Clintonia borealis	
Unifolium bifolium	
Unifolium trifolium	
Unifolium stellatum	
	Unifolium racemosum
	Polygonatum commutatum
	Polygonatum biflorum
	Medeola virginica
	Trillium nivale
Trillium cernuum	Trillium cernuum
Trillium grandiflorum	Trillium grandiflorum
Trillium erectum	Trillium erectum
	Trillium recurvatum
	Trillium sessile
	Smilax hispida
	Smilax rotundifolia
	Smilax echirrata
	Smilax herbacea
Amaryllidaceae.	
	Hypoxis erecta

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Juncus canadensis var. longecaudatus	
Juncus acuminatus var. legitimus	
Cyperella campestris var. multiflora	Cyperella campestris var. multiflora
Liliaceae.	
Tofieldia glutinosa	Tofieldia glutinosa
Zigadenus elegans	Zigadenus elegans
Melanthium virginicum	
Veratrum viride	Veratrum viride
Uvularia grandiflora	
Uvularia perfoliata	
Uvularia sessilifolia	
Allium canadense	
	Allium stellatum
Allium cernuum	Allium cernuum
Allium schoenoprasum	Allium schoenoprasum
Allium tricoccum	
Lilium canadense	
Lilium superbum	
Lilium philadelphicum	Lilium philadelphicum
Erythronium albidum	
Erythronium americanum	
Camassia fraseri	
Clintonia borealis	Clintonia borealis
Unifolium bifolium	Unifolium bifolium
Unifolium trifolium	Unifolium trifolium
Unifolium stellatum	Unifolium stellatum
Unifolium racemosum	
Polygonatum commutatum	
Polygonatum biflorum	
Medeola virginica	
Trillium nivale	
Trillium cernuum	
Trillium grandiflorum	
Trillium erectum	
Trillium recurvatum	
Trillium sessile	
Smilax hispida	
Smilax rotundifolia	
Smilax echirrata	
Smilax herbacea	
Amaryllidaceae.	
Hypoxis erecta	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Dioscoreaceae.	
	Dioscorea villosa
Iridaceae.	
	Iris versicolor
Sisyrinchium mucronatum	Sisyrinchium mucronatum
Sisyrinchium angustifolium	Sisyrinchium angustifolium
Orchidaceae.	
Cypripedilum acaule	
Cypripedilum spectabile	Cypripedilum spectabile
Cypripedilum pubescens	Cypripedilum pubescens
Cypripedilum parviflorum	
Cypripedilum candidum	Cypripedilum candidum
Cypripedilum arietinum	
Orchis spectabilis	Orchis spectabilis
Habenaria psycodes	Habenaria psycodes
Habenaria lacera	Habeneria lacera
Habenaria leucophaea	Habenaria leucophaea
Habenaria hookeriana	
Habenaria dilatata	
Habenaria hyperborea	
Habenaria bracteata	
Habenaria flava	Habenaria flava
Habenaria tridentata	Habenaria tridentata
Pogonia ophioglossoides	Pogonia ophioglossoides
Arethusa bulbosa	
Gyrostachys gracilis	
Gyrostachys cernua	Gyrostachys cernua
Gyrostachys romanzowiana	
Peramium pubescens	Peranium pubescens
Peramium repens	
Achroanthes unifolia	Achroanthes unifolia
Leptorchis loeselii	
	Leptorchis liliifolia
Corallorhiza multiflora	
Corallorhiza corallorhiza	
Cathea tuberosa	Cathea tuberosa
Aplectrum spicatum	Aplectrum spicatum
Juglandaceae.	
	Juglans nigra
Juglans cinerea	Juglans cinerea
	Scoria minima
	Scoria ovata
Myricaceae	
Myrica asplenifolia	Myrica asplenifolia
Salicaceae	
Populus monilifera	Populus monilifera

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Dioscoreaceae.	
Dioscorea villosa	
Iridaceae.	
Iris versicolor	
Sisyrinchium mucronatum	
Sisyrinchium angustifolium	
Orchidaceae.	
Cypripedilum acaule	Cypripedilum acaule
Cypripedilum spectabile	
Cypripedilum pubescens	Cypripedilum pubescens
Cypripedilum parviflorum	Cypripedilum parviflorum
Cypripedilum candidum	Cypripedilum candidum
Cypripedilum arietinum	
Orchis spectabilis	
Habenaria psycodes	
Habenaria lacera	
Habenaria leucophaea	
Habenaria hookeriana	
Habenaria dilatata	Habenaria dilatata
Habenaria hyperborea	Habenaria hyperborea
Habenaria bracteata	Habenaria bracteata
Habenaria flava	
Habenaria tridentata	
Pogonia ophioglossoides	
Arethusa bulbosa	
Gyrostachys gracilis	Gyrostachys gracilis
Gyrostachys cernua	
Gyrostachys romanzowiana	Gyrostachys romanzowiana
Peramium pubescens	
Peramium repens	Peramium repens
Achroanthes unifolia	
Leptorchis loeselii	
Leptorchis liliifolia	
Corallorhiza multiflora	Corallorhiza multiflora
Corallorhiza corallorhiza	Corollorhiza corallorhiza
Cathea tuberosa	
Aplectrum spicatum	Aplectrum spicatum,
Juglandaceae.	
Juglans nigra	
Juglans cinerea	
Scoria minima	
Scoria ovata	
Myricaceae.	
Myrica asplenifolia	
Salicaceae.	
Populus monilifera	Populus monilifera

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Populus balsamifera	
Populus grandidentata	Populus grandidentata
Populus tremuloides	
Salix myrtilloides	
Salix cordata	
Salix cordata var. angustata	Salix cordata var. angustata
Salix candida	
Salix petiolaris	
Salix tristis	Salix tristis
Salix humilis	Salix humilis
Salix discolor	Salix discolor
Salix rostrata	
Salix longifolia	
Salix lucida	
Salix amygdaloides	Salix amygdaloides
Salix nigra	Salix nigra
Betulaceae.	
	Carpinus caroliniana
	Ostrya ostrya
Corylus rostrata	
Corylus americana	Corylus americana
Betula pumila	
	Betula nigra
Betula papyrifera	
Alnus incana	
Fagaceae.	
	Quercus velutina
	Quercus rubra
	Quercus muhlenbergii
Quercus macrocarpa	Quercus macrocarpa
	Quercus alba
Ulmaceae.	
Ulmus racemosa	Ulmus racemosa
	Ulmus americana
	Ulmus fulva
	Celtis occidentalis
Moraceae.	
	Morus rubra
Humulus lupulus	Humulus lupulus,
Urticaceae.	
Urtica gracilis	
	Laportea canadensis
	Adicea pumila
	Ramium cylindricum
Parietaria pennsylvanica	Parietaria pennsylvanica

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Populus balsamifera	Populus balsamifera
Populus grandidentata	
Populus tremuloides	Populus tremuloides
Salix myrtilloides	Salix myrtilloides
Salix cordata	Salix cordata
Salix cordata var. angustata	
Salix candida	
Salix petiolaris	Salix petiolaris
Salix tristis	
Salix humilis	
Salix discolor	
Salix rostrata	Salix rostrata
Salix longifolia	Salix longifolia
Salix lucida	Salix lucida
	Salix amygdaloides
Salix nigra	Salix nigra
Betulaceae.	
Carpinus caroliniana	
Ostrya ostrya	
Corylus rostrata	Corylus rostrata
Corylus americana	
Betula pumila	
Betula nigra	
Betula papyrifera	Betula papyrifera
Alnus incana	Alnus incana
Fagaceae.	
Quercus velutina	
Quercus rubra	
Quercus muhlenbergii	
Quercus macrocarpa	
Quercus alba	
Ulmaceae.	
Ulmus racemosa	
Ulmus americana	
Ulmus fulva	
Celtis occidentalis	Celtis occidentalis
Moraceae.	
Morus rubra	
Humulus lupulus	Humulus lupulus
Urticaceae.	
Urtica gracilis	Urtica gracilis
Laportea canadensis	
Adicea pumila	
Ramium cylindricum	
Parietaria pennsylvanica	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Santalaceae.	
Comandra livida	
Comandra umbellata	
Comandra pallida	
Aristolochiaceae.	
Asarum canadense	
	Aristolochia sipho
Polygonaceae.	
	Rumex verticillatus
	Rumex altissimus
Rumex britannicus	Rumex britannicus
Rumex salicifolius	
Rumex persicarioides	Rumex persicarioides
	Polygonum acre
Polygonum hydropiper	
	Polygonum hydropiperoides
Polygonum hartwrightii	Polygonum hartwrightii
	Polygonum emersum
Polygonum amphibium	Polygonum amphibium
	Polygonum pennsylvanicum
Polygonum incarnatum	Polygonum incarnatum
Polygonum tenue	Polygonum tenue
Polygonum ramosissimum	Polygonum ramosissimum
	Polygonum erectum
Polygonum aviculare	Polygonum aviculare
	Polygonum virginianum
Polygonum articulatum	Polygonum articulatum
	Polygonum scandens
Polygonum cilinode	
Polygonum arifolium	Polygonum arifolium
	Polygonum sagittatum
Chenopodiaceae.	
Chenopodium rubrum	
	Chenopodium boscianum
Chenopodium capitatum	Chenopodium capitatum
Corispermum hyssopifolium	
Salsola kali	Salsola kali
Amarantaceae	
	Acnide tamariscina
	Froelichia floridana
	Amarantus blitoides
Phytolaccaceae.	
	Phytolacca decandra
Nyctaginaceae.	
	Mirabilis angustifolius

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Santalaceae.	
Comandra livida	Comandra livida
Comandra umbellata	Comandra umbellata
	Comandra pallida
Aristolochiaceae.	
Asarum canadense	
Aristolochia sipho	
Polygonaceae.	
Rumex verticillatus	
Rumex altissimus	Rumex altissimus
Rumex britannicus	Rumex britannicus
Rumex salicifolius	Rumex salicifolius
Rumex persicarioides	Rumex persicarioides
Polygonum acre	
Polygonum hydropiper	Polygonum hydropiper
Polygonum hydropiperoides	
Polygonum hartwrightii	Polygonum hartwrightii
Polygonum emersum	Polygonum emersum
Polygonum amphibium	Polygonum amphibium
Polygonum pennsylvanicum	Polygonum pennsylvanicum
Polygonum incarnatum	Polygonum incarnatum
Polygonum tenue	Polygonum tenue
Polygonum ramosissimum	Polygonum ramosissimum
Polygonum erectum	Polygonum erectum
Polygonum aviculare	
Polygonum virginianum	
Polygonum articulatum	
Polygonum scandens	Polygonum scandens
Polygonum cilinode	
Polygonum arifolium	
Polygonum sagittatum	
Chenopodiaceae.	
Chenopodium rubrum	Chenopodium rubrum
Chenopodium boscianum	
Chenopodium capitatum	Chenopodium capitatum
Corispermum hyssopifolium	Corispermum hyssopifolium
Salsola kali	
Amarantaceae.	
Acnide tamariscina	
Froelichia floridana	
	Amarantus blitoides
Phytolaccaceae.	
Phytolacca decandra	
Nyctaginaceae.	
	Mirabilis angustifolius

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
	Mirabilis hirsutus
	Mirabilis nyctagineus
Portula	*caceae.*
	Talinum teretifolium
Claytonia virginica	
	Portulaca retusa
Caryoph	*yllaceae.*
	Silene antirrhina
	Silene virginica
	Silene alba
	Silene stellata
Stellularia crassifolia	
Stellularia longipes	
Stellularia longifolia	
Cerastium arvense	
Cerastium arvense var. bracteatum	
Cerastium nutans	Cerastium nutans
Moehringia lateriflora	
	Anychia dichotoma
Nympha	*eaceae.*
	Nelumbo nelumbo
	Brasenia peltata
Leuconymphaea reniformis	Leuconymphaea reniformis
	Leuconymphaea ordorata
Nymphaea advena	Nymphaea advena
Ceratoph	*yllaceae.*
	Ceratophyllum demersum
Ranuncu	*laceae.*
	Hydrastis canadensis
Caltha palustris	
Isopyrum trifolium	
	Isopyrum biternatum
Actaea alba	
Actaea rubra	
	Aquilegia canadensis
	Delphinium carolinianum
	Delphinium tricorne
	Delphinium exaltatum
	Anemone thalictroides
Anemone hepatica	Anemone hepatica
Anemone hepatica var. acuta	Anemone hepatica var. acuta
Anemone quinquefolia	
Anemone dichotoma var. canadensis	

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
	Mirabilis hirsutus
	Mirabilis nyctagineus
Portulacaceae.	
Talinum teretifolium	Talinum teretifolium
Claytonia virginica	Claytonia virginica
	Portulaca retusa
Caryophyllaceae.	
Silene antirrhina	Silene antirrhina
Silene virginica	Silene virginica
Silene alba	
Silene stellata	Silene stellata
Stellularia crassifolia	Stellularia crassifolia
Stellularia longipes	Stellularia longipes
Stellularia longifolia	Stellularia longifolia
Cerastium arvense	Cerastium arvense
Cerastium arvense var. bracteatum	
Cerastium nutans	Cerastium nutans
Moehringia lateriflora	Moehringia lateriflora
Anychia dichotoma	
Nymphaeaceae.	
Nelumbo nelumbo	
Brasenia peltata	Brasenia peltata
Leuconymphaea reniformis	
Leuconymphaea ordorata	
Nymphaea advena	Nymphaea advena
Ceratophyllaceae.	
Ceratophyllum demersum	Ceratophyllum demersum
Ranunculaceae.	
Hydrastis canadensis	
Caltha palustris	Caltha palustris
Isopyrum trifolium	Isopyrum trifolium
Isopyrum biternatum	
Actaea alba	Actaea alba
Actaea rubra	Actaea rubra
Aquilegia canadensis	Aquilegia canadensis
Delphinium carolinianum	
Delphinium tricorne	
Delphinium exaltatum	
Anemone thalictroides	
Anemone hepatica	
Anemone hepatica var. acuta	
Anemone quinquefolia	Anemone quinquefolia
Anemone dichotoma var. canadensis	Anemone dichotoma var. canadensis

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Anemone virginiana	
Anemone cylindrica	
Anemone multifida	
Anemone parviflora	
	Anemone caroliniana
Anemone hirsutissima	
	Clematis virginiana
Oxygraphis cymbalaria	
Ranunculus pennsylvanicus	
Ranunculus repens	
Ranunculus septentrionalis	Ranunculus septentrionalis
	Ranunculus fascicularis
Ranunculus recurvatus	Ranunculus recurvatus
Ranunculus sceleratus	Ranunculus sceleratus
Ranunculus abortivus	Ranunculus abortivus
Ranunculus abortivus var. micranthus	
Ranunculus ovalis	
Ranunculus pedatifidus	
Ranunculus reptans	
Ranunculus ambigens	Ranunculus ambigens
Ranunculus lacustris	
Ranunculus lacustris var. terrestris	
Ranunculus aquatilis var. trichophyllus	Ranunculus aquatilis var. trichophyllus
Ranunculus aquatilis var. caespitosus	
Ranunculus circinnatus	
Thalictrum purpurascens	Thalictrum purpurascens
Thalictrum dioicum	
Berberidaceae	
	Podophyllum peltatum
Leontice thalictroides	Leontice thalictroides
Menispermaceae.	
Menispermum canadense	Menispermum canadense
Papaveraceae.	
Sauguinaria canadensis	Sanguinaria canadensis
Capnorchis cucullaria	
Capnorchis canadensis	
Neckeria aurea	Neckeria aurea
	Neckeria micrantha
	Neckeria flavula
Neckeria sempervirens	

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Anemone virginiana	Anemone virginiana
Anemone cylindrica	Anemone cylindrica
Anemone multifida	Anemone multifida
	Anemone parviflora
Anemone caroliniana	
Anemone hirsutissima	
Clematis virginiana	
Oxygraphis cymbalaria	Oxygraphis cymbalaria
Ranunculus pennsylvanicus	Ranunculus pennsylvanicus
	Ranunculus repens
Ranunculus septentrionalis	Ranunculus septentrionalis
Ranunculus fascicularis	
Ranunculus recurvatus	
Ranunculus sceleratus	Ranunculus sceleratus
Ranunculus abortivus	Ranunculus abortivus
Ranunculus abortivus var. micranthus	Ranunculus abortivus var. micranthus
Ranunculus ovalis	Ranunculus ovalis
Ranunculus pedatifidus	Ranunculus pedatifidus
Ranunculus reptans	Ranunculus reptans
Ranunculus ambigens	Ranunculus ambigens
Ranunculus lacustris	Ranunculus lacustris
Ranunculus lacustris var. terrestris	Ranunculus lacustris var. terrestris
Ranunculus aquatilis var. trichophyllus	Ranunculus aquatilis var. trichophyllus
Ranunculus aquatilis var. caespitosus	Ranunculus aquatilis var. caespitosus
Ranunculus circinnatus	Ranunculus circinnatus
Thalictrum purpurascens	
Thalictrum dioicum	Thalictrum dioicum
Berberidaceae.	
Podophyllum peltatum	
Leontice thalictroides	
Menispermaceae.	
Menispermum canadense	
Papaveraceae.	
Sanguinaria canadensis	
Capnorchis cucullaria	
Capnorchis canadensis	
Neckeria aurea	Neckeria aurea
Neckeria micrantha	Neckeria micrantha
Neckeria flavula	
Neckeria sempervirens	Neckeria sempervirens

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Cruciferae.	
	Thelypodium pinnatifidum
	Lepidium virginicum
Lepidium intermedium	Lepidium intermedium
Sisymbrium hartwegianum	Sisymbrium hartwegianum
Sisymbrium multifidum	
Barbarea barbarea var. stricta	
Nasturtium hispidum	Nasturtium hispidum
Nasturtium palustre	Nasturtium palustre
	Nasturtium sinuatum
Cardamine parviflora	Cardamine parviflora
Cardamine hirsuta	Cardamine hirsuta
	Cardamine bulbosa
	Cardamine laciniata
Cardamine diphylla	Cardamine diphylla
Lesquerella argentea	Lesquerella argentea
Draba nemorosa	
	Draba caroliniana
	Draba micrantha
	Draba verna
	Arabis dentata
Arabis lyrata	
Arabis confinis	Arabis confinis
Arabis glabra	
	Arabis canadensis
Arabis laevigata	Arabis laevigata
Arabis hirsuta	
	Arabis patens
Erysimum inconspicuum	
	Erysimum asperum
Erysimum cheiranthoides	Erysimum cheiranthoides
Capparidaceae.	
	Cleome serrulata
	Jacksonia dodecandra
Sarraceniaceae.	
Sarracenia purpurea	
Droseraceae.	
Drosera linearis	
Drosera intermedia var. americana	
Drosera rotundifolia	
Crassulaceae.	
	Penthorum sedoides
Saxifragaceae.	
Saxifraga pennsylvanica	

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Cruciferae.	
Thelypodium pinnatifidum	
Lepidium virginicum	Lepidium virginicum
Lepidium intermedium	Lepidium intermedium
	Sisymbrium hartwegianum
Sisymbrium multifidum	Sisymbrium multifidum
	Barbarea barbarea var. stricta
Nasturtium hispidum	Nasturtium hispidum
Nasturtium palustre	Nasturtium palustre
	Nasturtium sinuatum
Cardamine parviflora	Cardamine parviflora
Cardamine hirsuta	Cardamine hirsuta
Cardamine bulbosa	
Cardamine laciniata	
Cardamine diphylla	
	Lesquerella argentea
	Draba nemorosa
Draba caroliniana	
	Draba micrantha
Draba verna	
Arabis dentata	
Arabis lyrata	Arabis lyrata
Arabis confinis	Arabis confinis
	Arabis glabra
Arabis canadensis	
Arabis laevigata	
Arabis hirsuta	Arabis hirsuta
Arabis patens	
	Erysimum inconspicuum
	Erysimum asperum
Erysimum cheiranthoides	Erysimum cheiranthoides
Capparidaceae.	
Cleome serrulata	Cleome serrulata
Jacksonia dodecandra	Jacksonia dodecandra
Sarraceniaceae.	
Sarracenia purpurea	Sarracenia purpurea
Droseraceae.	
	Drosera linearis
Drosera intermedia var. americana	Drosera intermedia var. americana.
Drosera rotundifolia	Drosera rotundifolia
Crassulaceae.	
Penthorum sedoides	
Saxifragaceae.	
Saxifraga pennsylvanica	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Tiarella cordifolia	Tiarella cordifolia
Heuchera hispida	Heuchera hispida
	Heuchera americana
Mitella nuda	
Mitella diphylla	Mitella diphylla
Chrysosplenium americanum	Chrysosplenium americanum
	Parnassia caroliniana
Parnassia palustris	
Ribes rubrum var. albinervium	
Ribes floridum	Ribes floridum
Ribes oxycanthoides	
	Ribes gracile
	Ribes cynobasti
Rosaceae.	
Opulaster opulifolius	Opulaster opulifolius
Spiraea tomentosa	Spiraea tomentosa
Spiraea salicifolia	
Pirus sambucifolia	
	Pirus arbutifolia
	Pirus coronaria
Amelanchier alnifolia	
	Amelanchier canadensis
Amelanchier canadensis var. obovalis	Amelanchier canadensis var. obovalis
	Crataegus crus-galli
	Crataegus coccinea
	Crataegus mollis
	Crataegus tomentosa
Rubus repens	
Rubus hispidus	Rubus hispidus
Rubus canadensis	
Rubus villosus	Rubus villosus
Rubus occidentalis	
Rubus strigosus	
Rubus triflorus	
Fragaria vesca	
Fragaria virginiana var. illinoensis	Fragaria virginiana var. illinoensis
Potentilla canadensis	Potentilla canadensis
Potentilla canadensis var. simplex	Potentilla canadensis var. simplex
Potentilla anserina	
Potentilla tridentata	
Potentilla fruticosa	
Potentilla palustris	

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Tiarella cordifolia	
Heuchera hispida	Heuchera hispida
Heuchera americana	
Mitella nuda	Mitella nuda
Mitella diphylla	Mitella diphylla
Chrysosplenium americanum	
Parnassia caroliniana	
Parnassia palustris	Parnassia palustris
Ribes rubrum var. albinervium	Ribes rubrum var. albinervium
Ribes floridum	
Ribes oxycanthoides	Ribes oxycanthoides
Ribes gracile	Ribes gracile
Ribes cynobasti	Ribes cynobasti
Rosaceae.	
Opulaster opulifolius	Opulaster opulifolius
Spiraea tomentosa	
Spiraea salicifolia	Spiraea salicifolia
Pirus sambucifolia	Pirus sambucifolia
Pirus arbutifolia	
Pirus coronaria	
	Amelanchier alnifolia
Amelanchier canadensis	
Amelanchier canadensis var. obovalis	Amelanchier canadensis var. obovalis
Crataegus crus-galli	
Crataegus coccinea	
Crataegus mollis	
Crataegus tomentosa	
Rubus repens	
Rubus hispidus	
Rubus canadensis	
Rubus villosus	
Rubus occidentalis	Rubus occidentalis
Rubus strigosus	Rubus strigosus
Rubus triflorus	Rubus triflorus
Fragaria vesca	Fragaria vesca
Fragaria virginiana var. illinoensis	Fragaria virginiana var. illinoensis
Potentilla canadensis	
Potentilla canadensis var. simplex	
Potentilla anserina	Potentilla anserina
Potentilla tridentata	Potentilla tridentata
Potentilla fruticosa	Potentilla fruticosa
Potentilla palustris	Potentilla palustris

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Potentilla argentea	Potentilla argentea
Potentilla pennsylvanica	
Potentilla pennsylvanica var. strigosa	
	Potentilla supina
Potentilla millegrana	Potentilla millegrana
Potentilla norvegica	Potentilla norvegica
Potentilla arguta	Potentilla arguta
Geum ciliatum	
Geum rivale	Geum rivale
Geum strictum	
Geum japonicum	
Geum virginianum	Geum virginianum
	Geum album
Agrimonia eupatoria	Agrimonia eupatoria
Rosa humilis	Rosa humilis
	Rosa carolina
Rosa pisocarpa	Rosa pisocarpa
Rosa acicularis	
Rosa virginiana	
	Rosa virginiana var. arkansana
	Prunus americana
Cerasus pumila	Cerasus pumila
	Cerasus serotina
Cerasus virginiana	Cerasus virginiana
Cerasus pennsylvanica	
Leguminosae.	
	Acuania illinoensis
	Cassia chamaecrista
	Gymnocladus dioicus
	Baptisia leucophaea
	Baptisia leucantha
	Baptisia tinctoria
	Falcata comosa
	Phaseolus pauciflorus
	Phaseolus angulosus
	Phaseolus polystachyos
Lathyrus palustris	Lathyrus palustris
Lathyrus palustris var. myrtifolius	Lathyrus palustris var. myrtifolius
Lathyrus glaucifolius	
Lathyrus venosus	Lathyrus venosus
	Apios apios
Vicia americana	Vicia americana
	Vicia caroliniana

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Potentilla argentea	
Potentilla pennsylvanica	Potentilla pennsylvanica
	Potentilla pennsylvanica var. strigosa
Potentilla supina	
	Potentilla millegrana
Potentilla norvegica	
Potentilla arguta	Potentilla arguta
Geum ciliatum	Geum ciliatum
Geum rivale	
Geum strictum	Geum strictum
Geum japonicum	Geum japonicum
Geum virginianum	
Geum album	
Agrimonia eupatoria	Agrimonia eupatoria
Rosa humilis	
Rosa carolina	
	Rosa pisocarpa
	Rosa acicularis
Rosa virginiana	Rosa virginiana
	Rosa virginiana var. arkansana
Prunus americana	
Cerasus pumila	
Cerasus serotina	
Cerasus virginiana	Cerasus virginiana
Cerasus pennsylvanica	Cerasus pennsylvanica
Leguminosae.	
Acuania illinoensis	
Cassia chamaecrista	
Gymnocladus dioicus	
Baptisia leucophaea	
Baptisia leucantha	
Baptisia tinctoria	
Falcata comosa	
Phaseolus pauciflorus	
Phaseolus angulosus	
Phaseolus polystachyos	
Lathyrus palustris	Lathyrus palustris
Lathyrus palustris var. myrtifolius	Lathyrus palustris var. myrtifolius
Lathyrus glaucifolius	Lathyrus glaucifolius
Lathyrus venosus	Lathyrus venosus
Apios apios	
Vicia americana	Vicia americana
Vicia caroliniana	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Vicia cracca	
	Lespedeza leptostachya
	Lespedeza frutescens
	Lespedeza hirta
	Lespedeza reticulata
	Lespedeza reticulata var. virginica
	Lespedeza violacea
	Lespedeza repens
Pleurolobus canadensis	Pleurolobus canadensis
	Pleurolobus paniculatus
	Pleurolobus dillenii
	Pleurolobus canescens
	Pleurolobus grandiflorus
	Pleurolobus nudiflorus
Glycyrrhiza lepidota	Glycyrrhiza lepidota
	Spiesia splendens
Spiesia lamberti	Spiesia lamberti
	Astragalus lotiflorus
Astragalus flexuosus	Astragalus flexuosus
Astragalus hypoglottis	
Astragalus adsurgens	
	Astragalus parviflorus
Astragalus canadensis	Astragalus canadensis
	Astragalus plattensis
	Astragalus caryocarpus
Amorpha canescens	Amorpha canescens
Amorpha microphylla	Amorpha microphylla
	Amorpha fruticosa
	Cracca virginiana
	Kuhnistera villosa
	Kuhnistera candida
	Kuhnistera purpurea
	Dalea dalea
	Psoralea tenuiflora
	Psoralea esculenta
Psoralea incana	Psoralea incana
Lotus americana	Lotus americana
	Lupinus perennis
Geraniaceae.	
Geranium carolinianum	Geranium carolinianum
Geranium maculatum	Geranium maculatum
Oxalidaceae.	
	Oxalis stricta
	Oxalis longiflora

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Vicia cracca	
Lespedeza leptostachya	
Lespedeza frutescens	
Lespedeza hirta	
Lespedeza reticulata	
Lespedeza reticulata var. virginica	
Lespedeza violacea	
Lespedeza repens	
Pleurolobus canadensis	
Pleurolobus paniculatus	
Pleurolobus dillenii	
Pleurolobus canescens	
Pleurolobus grandiflorus	
Pleurolobus nudiflorus	
Glycyrrhiza lepidota	Glycyrrhiza lepidota
	Spiesia splendens
Spiesia lamberti	
	Astragalus lotiflorus
	Astragalus flexuosus
	Astragalus hypoglottis
	Astragalus adsurgens
	Astragalus parviflorus
Astragalus canadensis	Astragalus canadensis
	Astragalus plattensis
	Astragalus caryocarpus
	Amorpha canescens
	Amorpha microphylla
Amorpha fruticosa	Amorpha fruticosa
Cracca virginiana	
	Kuhnistera villosa
	Kuhnistera candida
	Kuhnistera purpurea
	Dalea dalea
	Psoralea tenuiflora
	Psoralea esculenta
	Psoralea incana
	Lotus americana
Lupinus perennis	
Gerani	*aceae.*
Geranium carolinianum	Geranium carolinianum
Geranium maculatum	
Oxalid	*aceae.*
Oxalis stricta	Oxalis stricta
	Oxalis longiflora

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Linaceae.	
	Linum rigidum
	Linum sulcatum
Linum lewisii	Linum lewisii
Rutaceae.	
Zanthoxylum americanum	Zanthoxylum americanum
	Ptelea trifoliata
Polygalaceae.	
	Polygala verticillata
Polygala paucifolia	Polygala paucifolia
Polygala senega	Polygala senega
	Polygala senega var. latifolia.
	Polygala cruciata
	Polygala viridescens
Euphorbiaceae.	
	Ricinocarpus virginicus
	Euphorbia dictyosperma
	Euphorbia heterophylla
	Euphorbia corollata
	Euphorbia marginata
	Euphorbia nutans
	Euphorbia humistrata
	Euphorbia maculata
Euphorbia glyptosperma	Euphorbia glyptosperma
Euphorbia serpyllifolia	Euphorbia serpyllifolia
	Euphorbia geyeri
Stellariaceae.	
Stellaria verna	Stellaria verna
Anacardiaceae.	
	Rhus radicans
	Rhus vernix
	Rhus copallina
	Rhus glabra
	Rhus typhina
Celastraceae.	
	Evonymus atropuupureus
Celastrus scandens	Celastrus scandens
Aquifoliaceae.	
Ilex verticillata	Ilex verticillata
Staphyleuceae.	
Staphylea trifolia	Staphylea trifolia
Aceraceae.	
	Acer negundo
	Acer rubrum
Acer barbatum	Acer barbatum

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Linaceae.	
	Linum rigidum
Linum sulcatum	Linum sulcatum
	Linum lewisii
Rutaceae.	
Zanthoxylum americanum	
Ptelea trifoliata	
Polygalaceae.	
Polygala verticillata	Polygala verticillata
Polygala paucifolia	
Polygala senega	
Polygala senega var. latifolia	
Polygala cruciata	
Polygala viridescens	
Euphorbiaceae.	
Ricinocarpus virginicus	
	Euphorbia dictyosperma
	Euphorbia heterophylla
Euphorbia corollata	
	Euphorbia marginata
Euphorbia nutans	Euphorbia nutans
	Euphorbia humistrata
Euphorbia maculata	
	Euphorbia glyptosperma
	Euphorbia serpyllifolia
	Euphorbia geyeri
Stellariaceae.	
Stellaria verna	Stellaria verna
Anacardiaceae.	
Rhus radicans	
Rhus vernix	
Rhus copallina	
Rhus glabra	
Rhus typhina	
Celastraceae.	
Evonymus atropurpureus	
Celastrus scandens	
Aquifoliaceae.	
Ilex verticillata	
Staphyleaceae.	
Staphylea trifolia	
Aceraceae.	
Acer negundo	Acer negundo
Acer rubrum	
Acer barbatum	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
	Acer barbatum var. nigrum
	Acer saccharinum
Acer spicatum	
Acer pennsylvanicum	Acer pennsylvanicum
Balsaminaceae.	
Impatiens biflora	
Impatiens aurea	Impatiens aurea
Rhamnaceae.	
	Ceanothus ovatus
	Ceanothus americanus
Rhamnus alnifolia	
Vitaceae.	
	Parthenocissus quinquefolia
	Vitis aestivalis
	Vitis riparia
	Vitis cordifolia
Tiliaceae.	
Tilia americana	Tilia americana
Malvaceae	
	Malva triangulata
	Malva involucrata
	Napaea dioica
	Hibiscus militaris
Hypericaceae.	
	Hypericum canadense
	Hypericum gymnanthum
	Hypericum mutilum
Hypericum maculatum	Hypericum maculatum
	Hypericum prolificum
Hypericum ascyron	Hypericum ascyron
Hypericum virginicum	Hypericum virginicum
Cistaceae.	
	Helianthemum majus
Hudsonia tomentosa	Hudsonia tomentosa
Violaceae.	
Viola sylvestris	
Viola striata	Viola striata
Viola canadensis	
	Viola pubescens
Viola rotundifolia	
	Viola lanceolata
	Viola primulaefolia
Viola blanda	
Viola blanda var. amoena	Viola blanda var. amoena
Viola sagitatta	Viola sagitatta

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Acer barbatum var. nigrum	
Acer saccharinum	
Acer spicatum	
Acer pennsylvanicum	
Balsaminaceae.	
Impatiens biflora	Impatiens biflora
Impatiens aurea	Impatiens aurea
Rhamnaceae.	
Ceanothus ovatus	Ceanothus ovatus
Ceanothus americanus	
Rhamnus alnifolia	
Vitaceae.	
Parthenocissus quinquefolia	
Vitis aestivalis	
Vitis riparia	
Vitis cordifolia	
Tiliaceae.	
Tilia americana	
Malvaceae.	
Malva triangulata	
	Malva involucrata
Napaea dioica	
Hibiscus militaris	
Hypericaceae.	
Hypericum canadense	
Hypericum gymnanthum	
Hypericum mutilum	
Hypericum maculatum	
Hypericum prolificum	
Hypericum ascyron	
Hypericum virginicum	
Cistaceae.	
Helianthemum majus	
Hudsonia tomentosa	
Violaceae.	
Viola sylvestris	Viola sylvestris
Viola striata	
Viola canadensis	Viola canadensis
Viola pubescens	
Viola rotundifolia	
Viola lanceolata	
Viola primulaefolia	
Viola blanda	Viola blanda
Viola blanda var. amoena	
Viola sagittata	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
	Viola palmata
Viola palmata var. obliqua	Viola palmata var. obliqua
	Viola palmata var. cordata
	Viola pedatifida
Viola pedata	Viola pedata
Cactaceae.	
	Opuntia fragilis
	Opuntia missouriensis
	Opuntia rafinesquii
Thymelaeaceae.	
	Dirca palustris
Elaeagnaceae.	
Leptargyrria argentea	Leptargyrria argentea
Elaeagnus argentea	
Lythraceae.	
	Lythrum alatum
Oenotheraceae.	
Isnardia palustris	Isnardia palustris
	Isnardia polycarpa
Gaura coccinea	Gaura coccinea
	Gaura biennis
Epilobium hornemanni	
Epilobium coloratum	Epilobium coloratum
Epilobium strictum	
Epilobium palustre	
Epilobium lineare	
Epilobium angustifolium	Epilobium angustifolium
Circaea alpina	
Circaea lutetiana	Circaea lutetiana
	Oenothera albicaulis
	Oenothera serrulata
Oenothera pumila	
	Oenothera rhombipetala
Oenothera biennis	Oenothera biennis
Halorrhagidaceae.	
Hippuris vulgaris	Hippuris vulgaris
	Myriophyllum heterophyllum
	Myriophyllum verticillatum
Myriophyllum spicatum	Myriophyllum spicatum
Araliceae.	
Aralia trifolia	Aralia trifolia
Aralia quinquefolia	Aralia quinquefolia
Aralia nudicaulis	
Aralia hispida	Aralia hispida
Aralia racemosa	Aralia racemosa

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Viola palmata	
Viola palmata var. obliqua	Viola palmata var. obliqua
Viola palmata var. cordata	
	Viola pedatifida
Viola pedata	
Cactaceae.	
	Opuntia fragilis
	Opuntia missouriensis
Opuntia rafinesquii	
Thymelaeaceae.	
Dirca palustris	
Elaeagnaceae.	
	Leptargyraia argentea
Elaeagnus argentea	
Lythraceae.	
Lythrum alatum	
Oenotheraceae.	
Isnardia palustris	Isnardia palustris
Isnardia polycarpa	
	Gaura coccinea
Gaura biennis	Gaura biennis
Epilobium hornemanni	Epilobium hornemanni
Epilobium coloratum	
Epilobium strictum	
Epilobium palustre	Epilobium palustre
Epilobium lineare	Epilobium lineare
Epilobium angustifolium	Epilobium angustifolium
Circaea alpina	Circaea alpina
Circaea lutetiana	
	Oenothera albicaulis
	Oenothera serrulata
Oenothera pumila	
	Oenothera rhombipetala
Oenothera biennis	Oenothera biennis
Halorrhagidaceae.	
Hippuris vulgaris	Hippuris vulgaris
Myriophyllum heterophyllum	
Myriophyllum verticillatum	
Myriophyllum spicatum	
Araliaceae.	
Aralia trifolia	
Aralia quinquefolia	
Aralia nudicaulis	Aralia nudicaulis
Aralia hispida	
Aralia racemosa	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Umbell	*iferae.*
Sanicula marylandica	Sanicula marylandica
Sanicula canadensis	Sanicula canadensis
	Eryngium aquaticum
	Polytaenia nuttallii
Heracleum lanatum	Heracleum lanatum
	Peucedanum nudicaule
	Tiedemannia rigida
Angelica atropurpurea	
	Angelica villosa
	Thaspium aureum
Thaspium aureum var cordatum	Thaspium aureum var. cordatum
	Thaspium barbinode
	Zizia cordata
Zizia aurea	Zizia aurea
	Pimpinella integerrima
Cicuta bulbifera	
Cicuta virosa var. maculata	Cicuta virosa var. maculata
	Sium angustifolium
Sium cicutaefolium	Sium cicutaefolium
Deeringia canadensis	Deeringia canadensis
	Myrrhis claytoni
Myrrhis aristata	Myrrhis aristata
Corna	*ceae.*
Cornus canadensis	
Cornus alternifolia	Cornus alternifolia
	Cornus candidissima
	Cornus asperifolia
Cornus stolonifera	
	Cornus sericea
Cornus circinatus	Cornus circinatus
Pirola	*ceae.*
	Pseva maculata
Pseva umbellata	Pseva umbellata
Pirola secunda	
Pirola secunda var. pumila	
Pirola elliptica	Pirola elliptica
Pirola rotundifolia	
Pirola rotundifolia var. uliginosa	
Monotropa uniflora	Monotropa uniflora
Erica	*ceae.*
Ledum latifolium	
Andromeda polifolia	

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Umbelliferae.	
Sanicula marylandica	Sanicula marylandica
Sanicula canadensis	
Eryngium aquaticum	
Polytaenia nuttallii	Polytaenia nuttallii
Heracleum lanatum	Heracleum lanatum
	Peucedanum nudicaule
Tiedemannia rigida	
Angelica atropurpurea	
Angelica villosa	
Thaspium aureum	
Thaspium aureum var. cordatum	Thaspium aureum var. cordatum
Thaspium barbinode	
Zizia cordata	
Zizia aurea	Zizia aurea
Pimpinella integerrima	
Cicuta bulbifera	
Cicuta virosa var. maculata	Cicuta virosa var. maculata
Sium angustifolium	Sium angustifolium
Sium cicutaefolium	Sium cicutaefolium
Deeringia canadensis	
Myrrhis claytoni	Myrrhis claytoni
Myrrhis aristata	
Cornaceae.	
Cornus canadensis	Cornus canadensis
Cornus alternifolia	
Cornus candidissima	
Cornus asperifolia	
Cornus stolonifera	Cornus stolonifera
Cornus sericea	
Cornus circinatus	
Pirolaceae.	
Pseva maculata	
Pseva umbellata	Pseva umbellata
Pirola secunda	Pirola secunda
Pirola secunda var. pumila	Pirola secunda var. pumila
Pirola elliptica	Pirola elliptica
Pirola rotundifolia	Pirola rotundifolia
Pirola rotundifolia var. uliginosa	Pirola rotundifolia var. uliginosa
Monotropa uniflora	Monotropa uniflora
Ericaceae.	
Ledum latifolium	Ledum latifolium
Andromeda polifolia	Andromeda polifolia

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Lyonia calyculata	
Chiogenes hispidula	
Arctostaphylos uva-ursi	
Oxycoccus macrocarpus	
Oxycoccus oxycoccus	
Vaccinium corymbosum var. amoenum	
Vaccinium canadense	
Vaccinium pennsylvanicum	
	Vaccinium stamineum
Primu	*laceae.*
	Androsace occidentalis
Lysimachia thyrsiflora	
Lysimachia terrestris	Lysimachia terrestris
	Steironema quadriflorum
	Steironema lanceolatum var. hybridum
Steironema ciliatum	Steironema ciliatum
Trientalis americana	
	Centunculus minimus
Olea	*ceae.*
	Fraxinus sambucifolia
	Fraxinus pubescens
	Fraxinus viridis
	Fraxinus americana
Gentian	*aceae.*
Menyanthes trifoliata	
	Nymphodes lacunosum
Gentiana linearis var. rubricaulis	
	Gentiana flavida
	Gentiana andrewsii
	Gentiana saponaria
	Gentiana puberula
	Gentiana quinquefolia var. occidentalis
Gentiana serrata	
Gentiana americana	
Apocyn	*aceae.*
	Apocynum cannabinum
	Apocynum androsaemifolium
Asclepia	*daceae.*
Asclepias lanuginosa	Asclepias lanuginosa
	Asclepias viridiflora
	Asclepias floridana

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Lyonia calyculata	Lyonia calyculata
Chiogenes hispidula	Chiogenes hispidula
Arctostaphylos uva-ursi	Arctostaphylos uva-ursi
Oxycoccus macrocarpus	Oxycoccus macrocarpus
Oxycoccus oxycoccus	Oxycoccus oxycoccus
Vaccinium corymbosum var. amoenum	
Vaccinium canadense	
Vaccinium pennsylvanicum	
Vaccinium stamineum	
Primulaceae.	
	Androsace occidentalis
Lysimachia thyrsiflora	Lysimachia thyrsiflora
Lysimachia terrestris	
Steironema quadriflorum	
Steironema lanceolatum var. hybridum	
Steironema ciliatum	Steironema ciliatum
Trientalis americana	
Centunculus minimus	Centunculus minimus
Oleaceae.	
Fraxinus sambucifolia	Fraxinus sambucifolia
Fraxinus pubescens	
Fraxinus viridis	
Fraxinus americana	
Gentianaceae.	
Menyanthes trifoliata	Menyanthes trifoliata
Nymphodes lacunosum	
Gentiana linearis var. rubricaulis	
Gentiana flavida	
Gentiana andrewsii	
Gentiana saponaria	
Gentiana puberula	Gentiana puberula
Gentiana quinquefolia var. occidentalis	
Gentiana serrata	Gentiana serrata
Gentiana americana	
Apocynaceae.	
Apocynum cannabinum	Apocynum cannabinum
Apocynum androsaemifolium	Apocynum androsaemifolium
Asclepiadaceae.	
	Asclepias lanuginosa
Asclepias viridiflora	
Asclepias floridana	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
	Asclepias verticillata
	Asclepias quadrifolia
	Asclepias ovalifolia
	Asclepias exaltata
	Asclepias obtusifolia
	Asclepias sullivantii
	Asclepias syriaca
Asclepias speciosa	Asclepias speciosa
	Asclepias incarnata
	Asclepias purpurascens
	Asclepias tuberosa
Convolvulaceae.	
	Volvulus spithameus
Volvulus sepium	
	Cuscuta paradoxa
	Cuscuta gronovii
	Cuscuta gronovii var. saururi.
	Cuscuta coryli
	Cuscuta cephalanthi
	Cuscuta arvensis
	Cuscuta polygonorum
Polemoniaceae.	
	Phlox divaricata
	Phlox pilosa
	Phlox glaberrima
	Phlox maculata
Collomia linearis	
	Polemonium reptans
Hydrophyllaceae.	
Macrocalyx nyctalea	Macrocalyx nyctalea
	Hydrophyllum appendiculatum
Hydrophyllum virginianum	Hydrophyllum virginianum
	Phacelia purshii
Borraginaceae.	
	Onosmodium carolinianum
	Onosmodium carolinianum var. molle
	Lithospermum angustifolium
	Lithospermum carolinense
	Lithospermum canescens
	Lithospermum latifolium
	Myosotis virginica
	Myosotis arvensis
	Lappula virginiana

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Asclepias verticillata	
Asclepias quadrifolia	
	Asclepias ovalifolia
Asclepias exaltata	
Asclepias obtusifolia	
	Asclepias sullivantii
Asclepias syriaca	
	Asclepias speciosa
Asclepias incarnata	
Asclepias purpurascens	
Asclepias tuberosa	Asclepias tuberosa
Convolvulaceae.	
Volvulus spithameus	
Volvulus sepium	Volvulus sepium
	Cuscuta paradoxa
Cuscuta gronovii	
Cuscuta gronovii var. saururi	
Cuscuta coryli	Cuscuta coryli
Cuscuta cephalanthi	Cuscuta cephalanthi
Cuscuta arvensis	Cuscuta arvensis
Cuscuta polygonorum	
Polemoniaceae.	
Phlox divaricata	
Phlox pilosa	
Phlox glaberrima	
Phlox maculata	
	Collomia linearis
Polemonium reptans	
Hydrophyllaceae.	
Macrocalyx nyctalea	Macrocalyx nyctalea
Hydrophyllum appendiculatum	
Hydrophyllum virginianum	Hydrophyllum virginianum
Phacelia purshii	
Borraginaceae.	
Onosmodium carolinianum	
Onosmodium carolinianum var. molle	
	Lithospermum angustifolium
Lithospermum carolinense	
Lithospermum canescens	Lithospermum canescens
Lithospermum latifolium	
Myosotis virginica	Myosotis virginica
Myosotis arvensis	
Lappula virginiana	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Lappula deflexa var. americana	Lappula deflexa var. americana
Lappula redowskii var. pilosa	Lappula redowskii var. pilosa
	Cynoglossum virginicum
Verbenaceae.	
	Leptostachya leptostachya
	Verbena bracteosa
	Verbena stricta
	Verbena hastata
Verbena angustifolia	Verbena angustifolia
	Verbena urticaefolia
Labiatae.	
	Stachys aspera
Stachys palustris	Stachys palustris
	Physostegia virginiana
Brunella vulgaris	Brunella vulgaris
	Scutellaria parvula
Scutellaria galericulata	
Scutellaria lateriflora	
Dracocephalum parviflorum	
Vleckia foenicula	
	Vleckia scrophulariaefolia
	Vleckia nepetoides
	Monarda punctata
	Monarda fistulosa
	Hedeoma hispida
Acinos vulgaris	
	Koellia flexuosa
	Koellia virginiana
Lycopus sinuatus	Lycopus sinuatus
Lycopus lucidus var. obtusifolius	Lycopus lucidus var. obtusifolius
	Lycopus rubellus
Lycopus virginicus	Lycopus virginicus
Mentha canadensis	
	Teucrium canadense
Isanthus brachiatus	Isanthus brachiatus
Solanaceae.	
	Physalis lanceolata
	Physalis virginiana
	Physalis pubescens
	Physalis angulata
	Physalis philadelphica
Physalis grandiflora	

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
	Lappula deflexa var. americana
	Lappula redowskii var. pilosa
Cynoglossum virginicum	
Verbenaceae.	
Leptostachya leptostachya	
	Verbena bracteosa
	Verbena stricta
Verbena hastata	Verbena hastata
Verbena angustifolia	
Verbena urticaefolia	Verbena urticaefolia
Labiatae.	
Stachys aspera	
Stachys palustris	Stachys palustris
Physostegia virginiana	
Brunella vulgaris	Brunella vulgaris
Scutellaria parvula	
Scutellaria galericulata	Scutellaria galericulata
Scutellaria lateriflora	Scutellaria lateriflora
Dracocephalum parviflorum	Dracocephalum parviflorum
	Vleckia foenicula
Vleckia scrophulariaefolia	
Vleckia nepetoides	
Monarda punctata	
Monarda fistulosa	Monarda fistulosa
	Hedeoma hispida
Acinos vulgaris	Acinos vulgaris
Koellia flexuosa	
Koellia virginiana	
Lycopus sinuatus	Lycopus sinuatus
	Lycopus lucidus var. obtusifolius
Lycopus rubellus	
Lycopus virginicus	Lycopus virginicus
Mentha canadensis	Mentha canadensis
Teucrium canadense	
Isanthus brachiatus	
Solanaceae.	
Physalis lanceolata	Physalis lanceolata
Physalis virginiana	
Physalis pubescens	Physalis pubescens
Physalis angulata	
Physalis philadelphica	
Physalis grandiflora	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Solanum nigrum	Solanum nigrum
Scrophula	*riaceae.*
	Scrophularia nodosa var. marylandica
	Chelone glabra
	Penstenon acuminatus
	Penstemon grandiflorus
	Penstemon teretiflorus
Penstemon gracilis	Penstemon gracilis
	Penstemon hirsutus
	Mimulus glabratus var. jamesii
	Minulus ringens
	Gratiola virginiana
	Ilysanthes gratioloides
Veronica peregrina	Veronica peregrina
Veronica scutellata	
Veronica americana	
Veronica anagallis	
	Veronica virginica
	Synthyris houghtoniana
	Gerardia pedicularia
	Gerardia grandiflora
	Gerardia virginica
	Gerardia auriculata
	Gerardia aspera
	Gerardia purpurea
	Gerardia tenuifolia
	Gerardia tenuifolia var. asperula
	Castilleja sessiliflora
Castilleja pallida var. acuminata	
	Castilleja coccinea
Pedicularis lanceolata	Pedicularis lanceolata
	Pedicularis canadensis
Melampyrum lineare	
	Monniera rotundifolia
Lentibula	*riaceae.*
	Utricularia cornuta
Utricularia intermedia	
Utricularia minor	
Utricularia vulgaris	Utricularia vulgaris
Orobanc	*haceae.*
	Aphyllon ludovicianum
	Aphyllon fasciculatum

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Solanum nigrum	Solanum nigrum
Scrophulariaceae.	
Scrophularia nodosa var. marylandica	Scrophularia nodosa var. marylandica
Chelone glabra	
	Penstemon acuminatus
	Penstemon grandiflorus
	Penstemon teretiflorus
	Penstemon gracilis
Penstemon hirsutus	
Mimulus glabratus var. jamesii	Mimulus glabratus var. jamesii
Mimulus ringens	
Gratiola virginiana	Gratiola virginiana
Ilysanthes gratioloides	Ilysanthes gratioloides
Veronica peregrina	Veronica peregrina
Veronica scutellata	Veronica scutellata
Veronica americana	Veronica americana
Veronica anagallis	Veronica anagallis
Veronica virginica	
Synthyris houghtoniana	
Gerardia pedicularia	
Gerardia grandiflora	
Gerardia virginica	
Gerardia auriculata	
	Gerardia aspera
Gerardia purpurea	
Gerardia tenuifolia	
Gerardia tenuifolia var. asperula	
Castilleja sessiliflora	Castilleja sessiliflora
Castilleja pallida var. acuminata	Castilleja pallida var. acuminata
Castilleja coccinea	
Pedicularis lanceolata	
Pedicularis canadensis	
Melampyrum lineare	Melampyrum lineare
Monniera rotundifolia	Monniera rotundifolia
Lentibulariaceae.	
Utricularia cornuta	
Utricularia intermedia	Utricularia intermedia
Utricularia minor	Utricularia minor
Utricularia vulgaris	Utricularia vulgaris
Orobanchaceae.	
Aphyllon ludovicianum	Aphyllon ludovicianum
	Aphyllon fasciculatum

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
	Aphyllon uniflorum
Plantaginaceae.	
	Plantago patagonica var. gnaphalioides
	Plantago rugelii
	Plantago major
Rubiaceae.	
	Houstonia purpurea var. ciliolata
Houstonia purpurea var. longifolia	
Galium triflorum	Galium triflorum
Galium asprellum	Galium asprellum
	Galium concinnum
Galium trifidum	Galium trifidum
	Galium trifidum var. latifolium
Galium boreale	
Galium lanceolatum	Galium lanceolatum
	Galium circaezans
Galium aparine	Galium aparine
Caprifoliaceae.	
Linnaea borealis	
Symphoricarpos racemosus	
Symphoricarpos occidentalis	
	Symphoricarpos symphoricarpos
Lonicera glauca	
Lonicera sullivantii	Lonicera sullivantii
Lonicera ciliata	
Diervilla diervilla	Diervilla diervilla
	Triosteum perfoliatum
Sambucus racemosa	
	Sambucus canadensis
Viburnum opulus	
	Viburnum pubescens
	Viburnum dentatum
Viburnum lentago	Viburnum lentago
Adoxaceae.	
Adoxa moschatellina	
Valerianaceae.	
	Valeriana edulis
	Valerianella radiata
	Valerianella chenopodifolia
Cucurbitaceae.	
	Sicyos angulatus

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Aphyllon uniflorum	Aphyllon uniflorum
Plantaginaceae.	
	Plantago patagonica var. gnaphalioides
Plantago rugelii	
Plantago major	Plantago major
Rubiaceae.	
Houstonia purpurea var. ciliolata	
Houstonia purpurea var. longifolia	
Galium triflorum	Galium triflorum
Galium asprellum	
Galium concinnum	
Galium trifidum	Galium trifidum
Galium trifidum var. latifolium	
Galium boreale	Galium boreale
Galium lanceolatum	
Galium circaezans	
Galium aparine	Galium aparine
Caprifoliaceae.	
Linnaea borealis	Linnaea borealis
Symphoricarpos racemosus	Symphoricarpos racemosus
	Symphoricarpos occidentalis
Symphoricarpos symphoricarpos	
Lonicera glauca	Lonicera glauca
Lonicera sullivantii	Lonicera sullivantii
Lonicera ciliata	Lonicera ciliata
Diervilla diervilla	
Triosteum perfoliatum	
Sambucus racemosa	Sambucus racemosa
Sambucus canadensis	Sambucus canadensis
Viburnum opulus	Viburnum opulus
Viburnum pubescens	
Viburnum dentatum	
Viburnum lentago	
Adoxaceae.	
Adoxa moschatellina	Adoxa moschatellina
Valerianaceae.	
Valeriana edulis	Valeriana edulis
Valerianella radiata	
Valerianella chenopodifolia	
Cucurbitaceae.	
Sicyos angulatus	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Micrampelis echinata	Micrampelis echinata
Campanulaceae.	
	Campanula americana
Campanula aparinoides	
Campanula rotundifolia	Campanula rotundifolia
	Pentagonia perfoliata
Lobelia inflata	Lobelia inflata
Lobelia kalmii	
	Lobelia spicata
	Lobelia syphilitica
	Lobelia cardinalis
Compositae.	
	Vernonia fasciculata
	Vernonia noveboracensis
	Eupatorium ageratoides
	Eupatorium perfoliatum
	Eupatorium altissimum
	Eupatorium serotinum
Eupatorium purpureum	Eupatorium purpureum
	Kuhnia eupatorioides
	Kuhnia eupatorioides var. glutinosa
	Laciniaria spicata
	Laciniaria pycnostachya
	Laciniaria scariosa
	Laciniaria punctata
	Laciniaria cylindracea
	Laciniaria squarrosa
	Laciniaria squarrosa var. intermedia
Grindelia squarrosa	Grindelia squarrosa
Diplogon villosum	Diplogon villosum
	Solidago occidentalis
Solidago graminifolia	
	Solidago riddelli
	Solidago rigida
	Solidago radula
	Solidago nemoralis
	Solidago nemoralis var. mollis
Solidago canadensis	Solidago canadensis
	Solidago serotina
Solidago serotina var. gigantea	Solidago serotina var. gigantea
	Solidago missouriensis
Solidago juncea	
Solidago neglecta	

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Micrampelis echinata	Micrampelis echinata
Campanulaceae.	
Campanula americana	
Campanula aparinoides	
Campanula rotundifolia	Campanula rotundifolia
Pentagonia perfoliata	Pentagonia perfoliata
Lobelia inflata	
Lobelia kalmii	Lobelia kalmii
Lobelia spicata	
Lobelia syphilitica	
Lobelia cardinalis	
Compositae.	
	Vernonia fasciculata
Vernonia noveboracensis	
Eupatorium ageratoides	
Eupatorium perfoliatum	
Eupatorium altissimum	
Eupatorium serotinum	
Eupatorium purpureum	Eupatorium purpureum
	Kuhnia eupatorioides
	Kuhnia eupatorioides var. glutinosa
Laciniaria spicata	
	Laciniaria pycnostachya
Laciniaria scariosa	
	Laciniaria punctata
Laciniaria cylindracea	Laciniaria cylindracea
Laciniaria squarrosa	
Laciniaria squarrosa var. intermedia	
	Grindelia squarrosa
	Diplogon villosum
	Solidago occidentalis
Solidago graminifolia	Solidago graminifolia
Solidago riddellii	Solidago riddellii
Solidago rigida	Solidago rigida
	Solidago radula
Solidago nemoralis	Solidago nemoralis
	Solidago nemoralis var. mollis
Solidago canadensis	Solidago canadensis
Solidago serotina	Solidago serotina
Solidago serotina var. gigantea	Solidago serotina var. gigantea
	Solidago missouriensis
Solidago juncea	
Solidago neglecta	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
	Solidago rugosa
	Solidago patula
	Solidago speciosa
	Solidago speciosa var. rigidiuscula
	Solidago speciosa var. erecta
Solidago latifolia	Solidago latifolia
	Solidago caesia
	Haplopappus spinulosus
	Boltonia asteroides
Aster ptarmicoides	
Aster umbellatus	Aster umbellatus
Aster puniceus	Aster puniceus
Aster puniceus var. lucidus	Aster puniceus var. lucidus
	Aster nova belgii
Aster longifolius	
Aster junceus	
Aster salicifolius	Aster salicifolius
	Aster paniculatus
	Aster lateriflorus
	Aster vimineus
	Aster dumosus
	Aster multiflorus
	Aster ericoides var. villosus
Aster polyphyllus	Aster polyphyllus
Aster laevis	Aster laevis
	Aster drummondii
	Aster sagittaefolius
Aster cordifolius	Aster cordifolius
	Aster undulatus
	Aster azureus
	Aster patens
	Aster sericeus
	Aster novae-angliae
	Aster oblongifolius
Aster macrophyllus	Aster macrophyllus
	Aster asteroides
Aster divaricatus	Aster divaricatus
Erigeron philadelphicus	Erigeron philadelphicus
Erigeron pulchellus	Erigeron pulchellus
Erigeron glabellus	
	Erigeron ramosus
	Erigeron annuus
	Erigeron divaricatus
Erigeron canadensis	Erigeron canadensis

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Solidago rugosa	
Solidago patula	
Solidago speciosa	
	Solidago speciosa var. rigidiuscula
Solidago speciosa var. erecta	
Solidago latifolia	
Solidago caesia	
	Haplopappus spinulosus
Boltonia asteroides	
Aster ptarmicoides	Aster ptarmicoides
Aster umbellatus	
Aster puniceus	Aster puniceus
Aster puniceus var. lucidus	
Aster nova-belgii	
Aster longifolius	Aster longifolius
Aster junceus	
Aster salicifolius	
Aster paniculatus	
Aster lateriflorus	
Aster vimineus	
Aster dumosus	
Aster multiflorus	Aster multiflorus
Aster ericoides var. villosus	
Aster polyphyllus	
Aster laevis	
	Aster drummondii
Aster sagittaefolius	
Aster cordifolius	
Aster undulatus	
Aster azureus	Aster azureus
Aster patens	
Aster sericeus	Aster sericeus
Aster novae angliae	Aster novae-angliae
Aster oblongifolius	
Aster macrophyllus	
Aster asteroides	
Aster divaricatus	
Erigeron philadelphicus	Erigeron philadelphicus
Erigeron pulchellus	
	Erigeron glabellus
Erigeron ramosus	Erigeron ramosus
Erigeron annuus	Erigeron annuus
	Erigeron divaricatus
Erigeron canadensis	Erigeron canadensis

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
Antennaria plantaginifolia	Antennaria plantaginifolia
Anaphalis margaritacacea	
Gnaphalium uliginosum	
Gnaphalium decurrens	Gnaphalium decurrens
	Gnaphalium obtusifolium
Adenocaulon bicolor	
	Polymnia canadensis
	Silphium perfoliatum
	Silphium integrifolium
	Silphium terebinthinaceum
	Silphium laciniatum
	Parthenium integrifolium
	Cyclachaena xanthiifolia
	Ambrosia psilostachya
Ambrosia artemisiaefolia	Ambrosia artemisiaefolia
	Ambrosia trifida
	Ambrosia trifida var. integrifolia
	Xanthium canadense
Xanthium canadense var. echinatum	Xanthium canadense var. echinatum
	Heliopsis scabra
	Rudbeckia columnaris
	Rudbeckia pinnata
	Rudbeckia hirta
	Rudbeckia subtomentosa
	Rudbeckia laciniata
	Rudbeckia angustifolia
Helianthus tuberosus	Helianthus tuberosus
	Helianthus tuberosus var. subcanescens
Helianthus decapetalus	Helianthus decapetalus
	Helianthus tracheliifolius
Helianthus strumosus	Helianthus strumosus
	Helianthus hirsutus
	Helianthus divaricatus
	Helianthus maxmiliani
	Helianthus giganteus
	Helianthus grosse-serratus
	Helianthus laetiflorus
	Helianthus rigidus
	Helianthus petiolaris
	Helianthus annuus
	Coreopsis aristosa
	Coreopsis trichosperma

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Antennaria plantaginifolia	Antennaria plantaginifolia
Anaphalis margaritacea	Anaphalis margaritacea
Gnaphalium uliginosum	Gnaphalium uliginosum
Gnaphalium decurrens	Gnaphalium decurrens
Gnaphalium obtusifolium	
	Adenocaulon bicolor
Polymnia canadensis	
Silphium perfoliatum	
Silphium integrifolium	
Silphium terebinthinaceum	
	Silphium laciniatum
Parthenium integrifolium	
	Cyclachaena xanthiifolia
	Ambrosia psilostachya
Ambrosia artemisiaefolia	
Ambrosia trifida	
Ambrosia trifida var. integrifolia	
	Xanthium canadense
Xanthium canadense var. echinatum	
Heliopsis scabra	Heliopsis scabra
	Rudbeckia columnaris
Rudbeckia pinnata	
Rudbeckia hirta	
Rudbeckia subtomentosa	Rudbeckia subtomentosa
Rudbeckia laciniata	Rudbeckia laciniata
Rudbeckia angustifolia	
Helianthus tuberosus	
	Helianthus tuberosus var. subcanescens
Helianthus decapetalus	
Helianthus tracheliifolius	
Helianthus strumosus	
Helianthus hirsutus	
Helianthus divaricatus	
	Helianthus maxmiliani
Helianthus giganteus	Helianthus giganteus
Helianthus grosse-serratus	Helianthus grosse-serratus
Helianthus laetiflorus	Helianthus laetiflorus
	Helianthus rigidus
	Helianthus petiolaris
	Helianthus annuus
Coreopsis aristosa	Coreopsis aristosa
Coreopsis trichosperma	

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
	Coreopsis palmata
	Coreopsis tinctoria
Bidens beckii	Bidens beckii
	Bidens laevis
Bidens cernua	Bidens cernua
	Bidens connata
	Bidens frondosa
Helenium autumnale	Helenium autumnale
	Gaillardia aristata
	Dyssodia papposa
Achillea millefolium	Achillea millefolium
Artemisia frigida	Artemisia frigida
Artemisia biennis	
Artemiaia gnaphalodes	Artemisia gnaphalodes
Artemisia longifolia	Artemisia longifolia
	Artemisia serrata
Artemisia dracunculoides	Artemisia dracunculoides
Artemisia canadensis	Artemisia canadensis
	Artemisia caudata
	Erechthites hieracifolia
	Senecio ovatus
	Senecio atriplicifolius
	Senecio reniformis
Senecio lugens	Senecio lugens
Senecio integerrimus	
	Senecio tomentosus
Senecio aureus	Senecio aureus
	Senecio aureus var. pauperculus
Senecio aureus var. obovatus	Senecio aureus var. obovatus
Senecio palustris	
Cnicus odoratus,	Cnicus odoratus
	Cnicus muticus
Cnicus discolor	Cnicus discolor
	Cnicus altissimus
Cnicus undulatus	Cnicus undulatus
Lactuca spicata	Lactuca spicata
	Lactuca floridana
Lactuca pulchella	Lactuca pulchella
	Lactuca ludoviciana
	Lactuca hirsuta
Lactuca canadensis	Lactuca canadensis
Taraxacum taraxacum	Taraxacum taraxacum
Nothocalais cuspidatum	Nothocalais cuspidatum
Agoseris glauca	Agoseris glauca

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
	Coreopsis palmata
	Coreopsis tinctoria
Bidens beckii	
Bidens laevis	Bidens laevis
Bidens cernua	Bidens cernua
Bidens connata	
Bidens frondosa	
Helenium autumnale	Helenium autumnale
	Gaillardia aristata
Dyssodia papposa	Dyssodia papposa
Achillea millefolium	Achillea millefolium
	Artemisia frigida
Artemisia biennis	Artemisia biennis
	Artemisia gnaphalodes
	Artemisia longifolia
Artemisia serrata	Artemisia serrata
	Artemisia dracunculoides
Artemisia canadensis	Artemisia canadensis
Artemisia caudata	
Erechthites hieracifolia	
Senecio ovatus	
Senecio atriplicifolius	
Senecio reniformis	
	Senecio lugens
	Senecio integerrimus
Senecio tomentosus	
Senecio aureus	Senecio aureus
Senecio aureus var. pauperculus	Senecio aureus var. pauperculus
Senecio aureus var. obovatus	
Senecio palustris	Senecio palustris
Cnicus odoratus	
Cnicus muticus	
Cnicus discolor	
Cnicus altissimus	
	Cnicus undulatus
Lactuca spicata	Lactuca spicata
Lactuca floridana	
Lactuca pulchella	Lactuca pulchella
	Lactuca ludoviciana
Lactuca hirsuta	
Lactuca canadensis	
Taraxacum taraxacum	Taraxacum taraxacum
	Nothocalais cuspidatum
	Agoseris glauca

D. Table Illustrating General Continental Range

NORTHERN.	SOUTHERN.
....	Adopogon virginicum..........
Lygodesmia juncea..........	Lygodesmia juncea..........
....	Prenanthes serpentaria..........
Prenanthes alba..........	Prenanthes alba..........
....	Prenanthes aspera..........
Prenanthes racemosa..........	Prenanthes racemosa..........
....	Prenanthes crepidinea..........
Crepis runcinata..........	....
....	Hieracium longipilum..........
Hieracium venosum..........	Hieracium venosum..........
Hieracium canadense..........	....

Before proceeding with the range statistics, a table of general statistics is herewith presented:

15. Representation of Species.

	No. of species.	Per cent. of all species.	Av. no. of species per genus.
Monocotyledones......	334	28.4	3.15
Archichlamydeae.....	459	39.1	2.63
Metachlamydeae......	381	32.3	2.97
Total no. val. species.	1174	....	General av. no. per genus......2.87

The larger average per cent. of species to the genus in the Monocotyledones is due to the influence in that group of the genus *Carex*, among other conditions. In addition, the general dispersion which has been supposed to mark the taxonomic group of the Monocotyledones in particular, has doubtless its influence on the average number of species per genus. Passing next to the statistics condensed from Table D, we isolate first the four principal range elements. These are:

(1) The Northern Specific Element.
(2) The Southern Specific Element.
(3) The Eastern Specific Element.
(4) The Western Specific Element.

of Minnesota Valley Metaspermic Species.—*Continued.*

EASTERN.	WESTERN.
Adopogon virginicum	Adopogon virginicum
	Lygodesmia juncea
Prenanthes serpentaria	
Prenanthes alba	
Prenanthes aspera	
Prenanthes racemosa	
Prenanthes crepidinea	
	Crepis runcinata
Hieracium longipilum	Hieracium longipilum
Hieracium venosum	
Hieracium canadense	Hieracium canadense

Taking these up in order, let us first note the character of the northern element:

16. The Northern Specific Element.

	No. of species.	Per cent. of all Northern.	Northern per cent. of each.
Monocotyledones	226	35.2	68.2
Archichlamydeae	257	40.0	55.9
Metachlamydeae	159	24.7	41.6
Total Northern	642		
North'n per cent. of all species	55.6		

In this table, as in the next three of its series, there is an exact parallelism with the four generic tables of similar construction. While the Archichlamydeae from their number form the larger percentages of each range-element, the taxonomic groups themselves analyse as before by range-elements. The other three tables may now be added.

17. The Southern Specific Element.

	No. of species.	Per cent. of all Southern.	Southern per cent. of each
Monocotyledones	229	25.6	69.1
Archichlamydeae	344	38.5	75.1
Metachlamydeae	319	35.7	83.9
Total Southern	892		
Southern per cent of all species	76.1		

18. The Eastern Specific Element.

	No. of species.	Per cent. of all Eastern.	Eastern per cent. of each
Monocotyledones	310	30.3	93.6
Archichlamydeae	396	38.7	86.1
Metachlamydeae	316	30.9	82.9
Total Eastern	1,022		
Eastern per cent. of all species	87.2		

19. The Western Specific Element.

	No. of species.	Per cent. of all Western.	Western per cent. of each.
Monocotyledones	176	29.1	53.1
Archichlamydeae	229	37.9	49.6
Metachlamydeae	198	32.8	51.9
Total Western	603		
Western per cent. of all	51.4		

The general parallelism between these tables and those of the generic range-elements need not be noted here in detail. As before, the largest figure is that which indicates the eastern range-per cent. of the Monocotyledones. The even north and south range of the Monocotyledones is to be observed, together with the preponderant southward massing of the Metachlamydeae. The eastern and western percentages of Metachlamydeae are found to approach each other more closely than such percentages in the other two groups,—indicating as before, the comparative lateral solidarity of the Metachlamydeae, to be set over against the comparative longitudinal solidarity of the Monocotyledones. In both cases the Archichlamydeae are seen to occupy the intermediate position. As a whole the metaspermic flora of the Minnesota valley presents itself as distinctly eastern and southern by species as before by genera. The statistics are as follows:

Total Northern......	642	Northern per cent. of all species..	55.6
Total Southern......	892	Southern per cent. of all species..	76.1
Total Eastern.......	1,022	Eastern per cent. of all species...	87.2
Total Western.......	603	Western per cent. of all species...	51.4

It is possible, too, from Table D. to determine certain compound-ranges, both numerically and by percentages. Upon examining the table it will appear that the following groups may be isolated for study:

(1) North-East Specific Element. NE.
(2) North-West Specific Element. NW.
(3) North-East-West Specific Element. NEW.
(4) North-South-West Specific Element. NSW.
(5) North-South-East Specific Element. NSE.
(6) North-South-East-West Specific Element. NSEW.
(7) South-East Specific Element. SE.
(8) South-West Specific Element. SW.
(9) South-East-West Specific Element. SEW.

The tables of these nine combination groups are as follows

20. The North-East Specific Element.

	No. of species.	Per cent. of all N. E.	N. E. per cent. of each.
Monocotyledones	24	41.9	7.2
Archichlamydeae	20	35.7	4.3
Metachlamydeae	12	21.4	3.1
Total N. E.	56	.....	.....
N. E. per cent. of all species	4.7	.....	.....

21. The North-West Specific Element.

	No. of species.	Per cent. of all N. W.	N. W. per cent. of each.
Monocotyledones	6	21.4	1.8
Archichlamydeae	15	53.5	3.2
Metachlamydeae	7	25.0	1.8
Total N. W	28	.....	.....
N. W. per cent. of all species	2.3	.....	.....

22. The North-East-West Specific Element.

	No of species.	Per cent. of all N. E W.	N. E. W. per cent. of each.
Monocotyledones	72	36.7	21 4
Archichlamydeae	80	40.8	17.2
Metachlamydeae	44	22.4	11.5
Total N. E. W	196	.....	.....
N. E. W. per cent. of all species	16.7	.....	.....

23. The North-South-East Specific Element.

	No. of species.	Per cent of all N. S. E.	N. S. E. per cent. of each.
Monocotyledones	59	38.6	14.4
Archichlamydeae	70	40.9	15.2
Metachlamydeae	32	19.8	8.4
Total N. S. E	161		
N. S. E. per cent. of all species	13.6		

24. The North-South-West Specific Element.

	No. of species.	Per cent. of all N. S. W.	N. S. W. per cent. of each.
Monocotyledones	5	12.8	1.5
Archichlamydeae	15	38.4	3.2
Metachlamydeae	19	48.7	4.9
Total N. S. W	39		
N. S. W. per cent. of all species	3.5		

25. The North-South-East-West Specific Element.

	No. of species.	Per cent. of all N. S. E. W.	N. S. E. W. per cent. of each.
Monocotyledones	62	41.3	18.7
Archichlamydeae	54	36.0	11.7
Metachlamydeae	34	22.7	8.9
Total N. S. E. W	150		
N.S.E.W. per ct. of all species	12.8		

26. The South-East Specific Element.

	No. of species.	Per cent. of all S. E.	S. E. per cent. of each.
Monocotyledones	69	19.7	17.5
Archichlamydeae	141	40.2	30.5
Metachlamydeae	140	40.0	36.8
Total S. E	350		
S. E. per cent. of all species	32.5		

27. The South-West Specific Element.

	No. of species.	Per cent. of all S. W.	S. W. per cent. of each.
Monocotyledones	11	12.6	3.3
Archichlamydeae	35	40.2	7.9
Metachlamydeae	41	47.1	10.7
Total S. W	87		
S. W. per cent. of all species	7.5		

28. The South-East-West Specific Element.

	No. of species.	Per cent. of all S. E. W.	S. E. W. per cent of each.
Monocotyledones	22	22.0	6.6
Archichlamydeae	27	27.0	5.8
Metachlamydeae	51	51.0	13.1
Total S. E. W	100		
S. E. W. per cent. of all species	8.5		

From the nine tables preceding it will be observed that the SE. element, forming 32.5 per cent. of the total species, is the largest numerically, while the NE., with but 2.3 per cent. of the total species, is the smallest. The NEW. element, forming 16.7 per cent. of the total, is larger than the SEW. element, which forms but 8.5 per cent. of the total. General east and west ranging is more characteristic, then, of the northern than of the southern element, and this fact is quite in accord with the greater dispersion of the northern floral elements. Of the NEW. element the actual percentages of Monocotyledones and Archichlamydeae are in excess of the Metachlamydeae percentages, while in the SEW. element the reverse is the case. These range-elements form similar percentages of the taxonomic groups. Of the Monocotyledones and Archichlamydeae, respectively, 21.4 per cent. and 17.2 per cent. are placed in the NEW. element, while of the Metachlamydeae only 11.5 per cent. are so enrolled. On the other hand, in the Metachlamydeae 13.1 per cent are entered as SEW., while of the Monocotyledones and Archichlamydeae respectively 6.6 per cent. and 5.8 per cent. are so entered. The Archichlamydeae with 27.0 per cent. form, however, a larger portion of the total SEW. element than do the Monocotyledones with 22.0 per cent.

The two vertically distributed groups are somewhat more difficult to understand. The NSE. is in distinct preponderance over the NSW., having 13.6 per cent. of the total against 3.5 per cent. This is on account of the general eastern preponderance over western. Of the NSE. element the Metachlamydeae with 19.8 per cent. are behind the Monocotyledones with 36.6 per cent. and the Archichlamydeae with 40.9 per cent. Of the NSW. element, the Metachlamydeae are ahead with 48.7 per cent. against 38.4 per cent. of Archichlamydeae and 12.8 per cent. of Monocotyledones. This differerence between the two vertical elements is probably to be referred to the lateral influence of the mountain ranges east and west of the Minnesota valley and to the angle made by the two principal continental trenches—the Mississippi valley and the the lake-region valley of Canada and the boundary. It has been easier for Metachlamydeae to move north and south in the *western* part of the continent, for the general movement has been from the south to the north; it has been easier for Monocotyledones to move south and north, in the *eastern* part of the continent, for the general movement has been both north and south and the lake-region trench with the Appallachian system has favored their movements in the east rather than the west. Between Monocotyledones and Archichlamydeae on the one hand and Metachlamydeae on the other, the topography of the continent, considering the points of greatest distinctive pressure for each group, would seem, perhaps, to tend towards the establishment of a general diagonal tension-line running in a direction north-west by south-east. On the south and west the upward movement of north-bound plants would be easier than on the north and east, while on the north and east the downward movement of south-bound plants would be easier than on the south and west. Under such conditions the preponderance of the Metachlamydeae—which are distinctively central and north-bound--would be rather to the west than to the east, while the preponderance of Archichlamydeae—which are distinctively distal and south bound—would be rather to the east than to the west. In the Monocotyledones, since they are the most generally distributed, if this were a just explanation, we should expect to find such a difference strongly marked and such is actually the case, for of the NSE. element the Monocotyledones form 36.6 per cent. while of the NSW. element they form but 12.8 per cent. Evidently in the regions of the secondary longitudinal tensions their percentages would vary to the extent of complete reversal, in many cases. It is only in a region comparatively uninfluenced by longitudinal tensions that the diagonal tension could be recognised.

Whether or not the above paragraph indicates the true explanation of the different composition of the NSE. and NSW. range-elements, it is an interesting fact to note that in this central basin of the continent the NSE. species are preponderantly Monocotyledones and Archichlamydeae while the NSW. species are preponderantly Metachlamydeae.

The NSEW. element with its preponderance of Monocotyledones and slight representation of Metachlamydeae, offers no difficulties. By it, a further indication of the general ranges of Monocotyledones, as a group, and the special ranges of Metachlamydeae, as a group, is given. As in other similar cases the Archichlamydeae are seen to occupy the intermediate position.

The four binary elements, NE., NW., SE., SW., are similarly simple of explanation, with the exception, possibly of the NW. element. In the NE. element the Monocotyledones are preponderant and the Archichlamydeae intermediate. In both the SE. and SW. elements the Metachlamydeae are preponderant and the Archichlamydeae intermediate. These facts are seen to be exactly in line with the rest that have been given. In the NW. element which is numerically the smallest of all the combination elements, the Archichlamydeae are preponderant while the Monocotyledones and Metachlamydeae; for their respective numbers, contribute about equally to the element. This is probably to be attributed to two facts. First, the Siberian and the N. W. T. influence would be felt most strongly in the NW. element and this influence would consist principally of monocotyledonous and archichlamydeous forms. Second, the Monocotyledones of this influence would be generally more widely distributed in North America than the Archichlamydeae, so that they would be probably entered either in the NEW. or NSEW. elements. The Metachlamydeae then through their endemic and north-bound characteristics and the Monocotyledones through their general and south or north-bound characteristics have either failed, on the one hand to make the N. W. range or, on the other have ranged beyond and are in the more general categories. The intermediate condition of the Archichlamydeae is then, after all, the cause of their preponderance in the NW. element. Apparently, too, if the existence of the diagonal tension, discussed above, were borne out by further examination it would be possible for such a condition to appear in no other element than the NW. For in the NE. the Monocotyledones would have their greater ease of distribution to increase their preponderance while in the SE. and SW. the Metachlamydeae would in varying ratios predominate.

In general, then, the combination elements serve to add to the weight of evidence in favor of considering the Metachlamydeae, Archichlamydeae and Monocotyledones of different and more or less definite meaning as components. The two special cases are the NSW. and the NW. and an attempt, probably imperfect although, it is hoped, suggestive, has been made to show how in their case special topographical or geographical conditions have served to modify the more general biological conditions.

Of the 1,174 species and varieties considered as indigenous to the Minnesota valley, 317 are of extracontinental range. This number is quite exclusive of the 130 species and varieties which have been introduced into the Minnesota valley during the last fifty years, by the agency of man. It is intended also to be exclusive of such North American species as have been distributed abroad by other than the so-called agencies of nature. The group of 317 species and varieties may be known as the Extra-Continental specific element and may be isolated for examination. In the following list the countries of extra-continental distribution are noted for each species, and preceding each entry are given the letters which indicate the intra-continental range of the species. The list is herewith appended:

E. List of Species and Varieties of Minnesota Valley Metastaspermae which are of Extra-Continental Range.

Monocotyledones.

nsew. Typha latifolia. Eur., Asia, N. Africa.
new. Sparganium simplex. Eur., Sib.
nsew. Potamogeton natans. Eur., As., Aust., Afr.
nsew. Potamogeton fluitans. Eur., As., Aust., Afr., S. Amer.
nse. Potamogeton perfoliatus. Eur., As., Afr., Aust.
new. Potamogeton heterophyllos. Eur., As.
nse. Potamogeton gramineus var. zizii. Eur., As.
nsew. Potamogeton pusillus. Eur., Afr., As., S. Amer.
new. Potamogeton rutilus. Eur., As., Afr.
nsew. Potamogeton pectinatus. Eur., As., Aust.
nsew. Potamogeton lucens. Eur., As., Afr., Aust., W. Indies.
new. Potamogeton praelongus. Eur.
nsew. Potamogeton lanceolatus. Eur.
new. Potamogeton zosteraefolius. Eur., As.
nsew. Zanichellia palustris. Eur., As., Afr., Phillipines, Aust.
nsew. Najas flexilis. Eur., As., W. Indies.
new. Triglochin palustris. Eur., As., Afr.. S. Amer.
new. Triglochin maritima. Eur., As. Afr.
new. Scheuchzeria palustris. Eur., As.
new. Alisma plantago. Eur., As., Aust. Afr.
new. Sagittaria sagittaefolia. Eur., As.
nsew. Elodea canadensis. Eur., As.
se. Vallisneria spiralis. Eur., As., Aust.
se. Andropogon provincialis. France.
sew. Cenchrus tribuloides. Afr., E. and W. Indies.
se. Zizania aquatica. Sib., Japan.
nsew. Homalocenchrus oryzoides. Eur., As., Afr.
new. Phalaris arundinacea. Eur., As.
new. Hierochloë odorata var. fragrans. Eur., As.
se. Muhlenbergia sobolifera. Eur.
nsew. Agrostis hiemalis. As.
nsew. Agrostis perennans. As.?
nw. Deyeuxia neglecta. Eur., As.
new. Deyeuxia canadensis. Sib.

new. Deschampsia caespitosa. Eur., As., Aust., Afr., S. Amer.
new. Bouteloua curtipendula. Peru.
nw. Beckmannia erucaeformis. Eur., Sib.
nsew. Phragmites phragmites. Eur., As., Afr., Aust., S. Amer.
sew. Eragrostis eragrostis. Eur., As., Afr., Aust., S. Amer.
se. Eragrostis hypnoides. W. Ind., S. Amer.
new. Koeleria cristata. Eur., As.
new. Poa nemoralis. Eur., As.
new. Poa palustris. Eur., Afr., As.
nw. Poa compressa. Eur., Sib.
nw. Scolochloa arundinacea. Eur., Sib.
new. Panicularia fluitans. Eur., As., Afr.. Aust.
nsew. Festuca ovina. Eur., As.. Aust., S. Amer., Afr.
se. Bromus purgans. S. Amer.?, As.
nsew. Agropyrum caninum. Eur., Sib.
ne. Agropyrum violaceum. Eur
new. Agropyrum glaucum. Eur., As.
nsw. Hordeum nodosum. Eur., As., Afr., Aust., S. Amer.
nw. Hordeum jubatum. Eur., Sib.
sew. Hemicarpha micrantha. Brazil.
sew. Cyperus esculentus. Eur., As.. Afr., Aust.
sew. Cyperus aristatus. Afr., E. Indies.
new. Eriophorum gracile. Eur., Sib.
new. Eriophorum polystachion. Eur., As.
new. Eriophorum vaginatum. Eur., As.
nsew. Scirpus lacustris. Eur., As., Aust., Sandwich Isls.
nsew. Scirpus triangularis. Eur., Aust., S. Amer., W. Indies.
nsew. Heleocharis acicularis. Eur., As.
nsew. Heleocharis palustris. Eur., As., Afr., Malay Arch., Austr.
nsew. Heleocharis ovata. Eur., As.
sew. Iria capillaris. Tropics.
nsew. Rhyncospora alba. Eur., As.
new. Carex siccata. As.
ne. Carex tenuiflora. Eur., As.
new. Carex canescens. Eur., As., Chile.
new. Carex tenella. Eur.
new. Carex sartwellii. As.
new. Carex teretiuscula. Eur., As., N. Zeal.
nsw. Carex stenophylla. Eur.
ne. Carex chordorhiza. Eur., As.
new. Carex limosa. Eur., As.
new. Carex magellanica. Eur., S. Amer.
new. Carex aquatilis. Eur.
nsew. Carex fusca. Eur., As., Aust.
nse. Carex riparia. Eur., As., Afr., S. Amer.
new. Carex filiformis. Eur., As.
ne. Carex pseudocyperus. Eur., As., Afr., Aust.
ne. Carex pauciflora. Eur.
nse. Acorus calamus. Eur., As., China, Japan.
ne. Spathyema foetida. Japan, Amurland.
ne. Calla palustris. Eur., As.
nsew. Lemna minor. Eur., As., Afr., Aust., S. Amer.

nsew. Lemna trisulca. Eur., As., Aust., Afr., S. Amer.
nsew. Lemna polyrhiza. Eur., As., Aust., W. Indies.
se. Grantia braziliensis. Brazil.
ne. Eriocaulon septangulare. Ireland, Skye, Hebrides.
sew. Heteranthera dubia. Cuba.
nsew. Juncus tenuis. Eur., N. Zeal., Tristan d'Achuna.
ne. Juncus balticus. S. Amer., Patagonia, Spain.
new. Juncus filiformis. Eur., As., Patagonia.
nsew. Juncus effusus. Eur., As., Afr., Aust., S. Amer.
new. Juncus nodosus. As.?
nse. Juncus canadensis var. longicaudatus. S. Amer.
nsew. Cyperella campestris. Eur., As., N. Afr., N. Zeal.
new. Tofieldia glutinosa. N. As.
new. Veratrum viride. Sib.
new. Allium schoenoprasum. Eur., Sib., Japan, Himalayas.
new. Unifolium bifolium. Eur., As.
new. Unifolium trifolium. As.
new. Unifolium stellatum. Norway.
se. Smilax rotundifolia. W. Indies.
se. Smilax herbacea. Japan.
nse. Sisyrinchium angustifolium. Eur.
new. Habenaria dilatata. N. As., N. Eur.
new. Habenaria hyperborea. Iceland.
new. Habenaria bracteata. Asia.
nse. Pogonia ophioglossoides. Japan.?
new. Gyrostachys romanzowiana. Eur., As.
new. Peramium repens. N. Eur., N. As.
nse. Achroanthes unifolia. Russia.?
ne. Leptorchis loeselii. Eur., As.
new. Corallorhiza corallorhiza. N. Eur., N. As.

Archichlamydeae.

se. Juglans nigra. S. Amer.
new. Salix myrtilloides. Eur., As.
new. Salix longifolia. Asia.?
se. Ostrya ostrya. Japan.
new. Corylus rostrata. N. E. Asia.
new. Alnus incana. N. Eur., N. As.
new. Rumex salicifolius. N. As.
nsew. Rumex persicarioides. Eur., As.?
new. Polygonum hydropiper. Eur., As.
se. Polygonum hydropiperoides. S. Amer., Aust.
nsew. Polygonum amphibium. Eur., As., S. Afr., Japan
nsew. Polygonum incarnatum. Eur., As.
sew. Polygonum erectum. Eur., As.
nse. Polygonum aviculare. Eur., As., Japan.
sew. Polygonum scandens. Eur., As.
nse. Polygonum arifolium. As.?
se. Polygonum sagittatum. As.
new. Chenopodium rubrum. Eur.
nsew. Chenopodium capitatum. Eur., As.
new. Corispermum hyssopifolium. Eur., As., Manch., China.

nse. Salsola kali. Eur., As., Afr., Aust., S. Amer.
se. Phytolacca decandra. Eur , China.?
new. Stellularia crassifolia. N. Eur., N. As.
new. Stellularia longipes. Circumpolar, Eur , As.
new. Stellularia longifolia. N. As., Manch., Eur.
new. Cerastium arvense. Eur., N. Afr., As., S. Amer., Patagonia.
ne. Cerastium arvense var. bracteatum. Amurland, Sib.?
new. Moehringia lateriflora Eur., N. As.
se. Nelumbo nelumbo. W. Indies, S. Amer.
sew. Brasenia peltata. Japan, E. India, Trop. Afr., Aust., Cuba.
nsew. Nymphaea advena. E. Sib.?
sew. Ceratophyllum demusum. Eur., As., Japan.
new. Caltha palustris. Eur., As., China.
new. Isopyrum trifolium. Iceland, N. Asia, Japan.
se. Isopyrum biternatum. Kamtschatka.
new.? Actaea rubra. Eur., As., China.
sew. Aquilegia canadensis. N. E. Sib.?
nse. Anemone hepatica. Eur., As., China.
new. Anemone quinquefolia. N. As., China.
new. Anemone dichotoma. Eur., Sib.
new. Anemone multifida. Chile, Magellan.
nw Anemone parviflora. E. Sib.
ne. Anemone hirsutissima. E. Sib.?
new. Oxygraphis cymbalaria. Eur., As., China.
new. Ranunculus pennsylvanicus. China.
nw. Ranunculus repens. N. Eur., N. As., N. Afr.
nsew. Ranunculus septentrionalis. Eur., As.
nse. Ranunculus recurvatus. N. E. Sib.
nsew. Ranunculus sceleratus. N. Eur., As., China.
new. Ranunculus pedatifidus. Eur., As.
new. Ranunculus reptans. N. Eur., Sib.
new. Ranunculus ambigens. Eur.?
new. Ranunculus lacustris. Sib.
nsew. Ranunculus aquatilis var. trichophyllos. Eur., As., Aust., Afr.
new. Ranunculus circinnatus. Eur.
se. Podophyllum peltatum. Japan.
nse. Leontice thalictroides. Japan, Manchuria.
ne. Capnorchis cucullaria. Kamtsk.?
nsew. Neckeria aurea. Amurland.
new. Neckeria sempervirens. Sib., Kamtsk.
nw. Barbarea barbarea var. stricta. Eur., As., China.
nsew. Nasturtium hispidum. Sib.?
nsew. Nasturtium palustre. Eur. N. Afr., As.
nsew. Cardamine parviflora. N. Eur., N. As.
nsew. Cardamine hirsuta. N. Eur., N. As., China.
nw. Draba nemorosa. N. Eur., N. As., China.
se. Draba verna. S. Eur., Russia.
new. Arabis lyrata. Japan, Kuriles.
nw. Arabis glabra. N. Eur , As.
new. Arabis hirsuta. Eur., As.

nsew. Erysimum cheiranthoides. N. Eur., N. As., N. Afr.
new. Drosera intermedia. Eur., As., S. Amer.
new. Drosera rotundifolia. Eur., As.
se. Penthorum sedoides. Manch., Japan, China.
nse. Tiarella cordifolia. N. W. Asia, Baikal Sib.
new. Mitella nuda. Sib., Amurland.
nsew. Mitella diphylla. E. Sib.?
new. Parnassia palustris. Eur., As.
new. Ribes rubrum. Eur., As.
nse. Ribes floridum. Andes, S. Amer.
new. Spiraea salicifolia. Eur., As., China.
new. Pirus sambucifolia. Eur., Asia., Japan.
new. Rubus strigosus. Eur., As., Japan, N. Afr.?
new. Fragaria vesca. Eur., As.
new. Potentilla anserina. N. Eur., As., China, Aust., S. Amer.
new. Potentilla fruticosa. N. Eur., As., China, Japan.
new. Potentilla palustris. Eur., As.
nse. Potentilla argentea. Eur., As.
new. Potentilla pensylvanica. Sib., Japan.
se. Potentilla supina. Eur., As., China, S. Amer.
nse. Potentilla norvegica. Eur., As.
nse. Geum rivale. Eur., As., Aust., S. Amer.
new. Geum strictum. Eur., As , Japan, N. Zeal., S. Amer.
new. Geum japonicum. E. As., Japan.
nsew. Agrimonia eupatoria. Eur., As., N. Afr., S. Afr.
nw. Rosa acicularis. N Eur., As., China.
se. Cerasus serotina. S. Amer., Andes.
nsew. Lathyrus palustris. Eur., N. As., China.
ne. Vicia cracca. Eur., As., China, N. Afr.
nw. Astragalus hypoglottis. Sib., Kamtsk.
nw. Astragalus adsurgens. Sib., Kamtksk.
nse. Geranium maculatum. Sib.
sew. Oxalis stricta. N. Eur., N. As., China.
nsew. Stellaria verna. Eur., As., S. Amer.
se. Rhus radicans. N. E. As., Japan.
nse. Hypericum ascyron. Sib., China.
new. Viola sylvestris. Eur., Sib., China.
new. Viola canadensis. N. E. Asia.
nw. Viola pubescens. N. E. Asia.
ne. Viola rotundifolia. Kamtsk.?
new. Viola blanda. Kamtsk.
nsew. Isnardia palustris. Eur.. S. Afr., W. As.
new. Epilobium hornemanni. Eur., As.
new. Epilobium palustre. Eur., As.
new. Epilobium lineare. N. Eur., N. As.
nsew. Epilobium angustifolium. Eur., As., Japan.
new. Circaea alpina. Eur., As.. China, N. Afr.
nse. Circaea lutetiana. Eur., As., China, N. Afr.
nsew. Hippuris vulgaris. Eur., As.. Afr,, Austr., S. Amer.
se. Myriophyllum verticillatum. Eur., As., China, N. Afr.
nse. Myriophyllum spicatum. Eur., As., China, N. Afr.
nse. Aralia quinquefolia. Manch., Japan, Corea.

nse. Aralia racemosa. Saghalin, Japan.
nsew. Heracleum lanatum. As., Japan.
sew. Sium angustifolium. Eur., Sib.
nsew. Sium cicutaefolium. Eur., Sib.
nse. Deeringia canadensis. China, Japan.
sew. Myrrhis claytoni. Japan.
nse. Myrrhis aristata. Japan.
new. Cornus canadensis. Manch., Japan.

Metachlamydeae.

nsew. Pseva umbellata. Eur., As., Japan.
new. Pirola secunda. Eur., As., Japan.
nsew. Pirola elliptica. Japan.
new. Pirola rotundifolia. Eur., As., Japan.
nsew. Monotropa uniflora. As., Japan, S. Amer.
new. Andromeda polifolia. Eur., As.
new. Lyonia calyculata. Eur., As.
new. Chiogenes hispidula. Japan.
new. Arctostaphylos uva-ursi. N. Eur., N. As., Japan.
new. Oxycoccus macrocarpus. Kuriles.?
new. Oxycoccus oxycoccus. Eur., As., Japan.
new. Lysimachia thyrsiflora. Eur., Japan.
sew. Centunculus minimus. Eur., As., Aust., Brazil, Andes, Chile.
new. Menyanthes trifoliata. N. Eur., N. As., Japan.
new. Gentiana serrata. Eur., As., China.
se. Asclepias syriaca. Eur., As.
new. Volvulus sepium. Eur., As., Aust., N. Zeal., N. Afr., China.
sew. Cuscuta arvensis. S. Amer.
se. Myosotis arvensis. Eur., As., N. Afr.
nsw. Lappula redowskii. As.
se. Leptostachya leptostachya. E. Sib., Jap., India.
se. Stachys aspera. Japan, Kamtsk.
nsew. Stachys palustris. Eur., As.
nsew. Brunella vulgaris. Eur., As., N. Afr., Aust., S. Amer.
new. Scutellaria galericulata. Eur., As., Japan, N. Afr.
new. Acinos vulgaris. Eur., As., Japan. ?
nsw. Lycopus lucidus. Japan, Sib.
se. Teucrium canadense. Sib.?
sew. Physalis pubescens. China, Brazil, Barbadoes.
se. Physalis angulata. S. Amer., Africa.
nsew. Solanum nigrum. Eur., As., Afr., Aust., S. Amer.
sew. Scrophularia nodosa. Eur., Sib.
se. Mimulus ringens. Kuriles.
nsew. Veronica peregrina. Eur., As., Japan, Andes, S. Amer.
new. Veronica scutellata. Eur., As., N. Afr.
new. Veronica anagallis. Eur., As., China, N. Afr., S. Amer.
se. Veronica virginica. Japan, Sib.
new. Castilleja pallida. Eur., Sib.
se. Utricularia cornuta. Cuba, Brazil.
new. Utricularia intermedia. Eur., As., Japan.

new. Utricularia minor. Eur., As., N. Afr.
nsew. Utricularia vulgaris. Eur., As., N. Afr.
sew. Plantago major. Eur., As., China?, N. Afr.
nsew. Galium triflorum. Eur., As., Japan.
nse. Galium asprellum. As., Japan.
nsew. Galium trifidum. Eur., As., Japan.
new. Galium boreale. Eur., As., China.
nsew. Galium aparine. Eur., As., Japan.
new. Linnaea borealis. Eur., As., Japan.
new. Sambucus racemosus. Eur., As., Japan.
new. Viburnum opulus. Eur., As., Japan.
new. Adoxa moschatellina. Eur., As., China.
se. Sicyos angulatus. S. Eur., S. As.
nsew. Campanula rotundifolia. Eur., As., Japan.
sew. Pentagonia perfoliata. Chile, S. Amer.
nsew. Erigeron canadensis. Eur., As., China, S. Afr.?
new. Anaphalis margaritacea. Eur.?, N. As., Japan, Ceylon.
new. Gnaphalium uliginosum. Eur., As., China.
nw. Adenocaulon bicolor. Japan, Himalayas.
nse. Ambrosia artemisiaefolia. Brazil, W. Indies.
nse. Xanthium canadense var. echinatum. S. Amer., Chile.
nsew. Bidens cernua. Eur., As., China.
nsew. Achillea millefolium. Eur., As., N. Afr., Aust., Azores.
nsw. Artemisia frigida. Asia.
new. Artemisia biennis. Kamtsk., N. India.
nsew. Artemisia canadensis. N. W. Asia.
se. Erechtites hieracifolia. S. Amer., W. Indies.
nsw. Senecio lugens. N. As., N. Eur.
new. Senecio palustris. N. Eur., N. As.
nsew. Taraxacum taraxacum. Eur., As., China, S. Amer., Aust., Afr.
new. Hieracium canadense. N. Eur.

From the list the following tables may be compiled:

29. The Extra-Continental Specific Element.

	No. of species.	Per cent. of all E. C.	E. C. per cent. of each.
Monocotyledones............	116	36.5	34.7
Archichlamydeae............	130	41.0	28.3
Metachlamydeae.............	71	22.5	18.6
Total Extra-Continental....	317	....	....
E. C. per cent. of all species...	27.0	....	....

30. Distribution of Extra-Continental Species.

	Monocotyledones.	Archichlamydeae.	Metachlamydeae.	Total.	Per cent. of Extra-Continental.
Europe	89	78	46	213	67.1
Asia	88	121	63	272	85.7
Manchuria, Japan, China	6	54	40	100	31.5
Africa	28	17	14	59	15.4
Australasia	28	8	6	42	13.2
West Indies	8	1	4	13	4.1
South America	22	15	14	51	16.0

31. Intra-Continental Distribution of Extra-Continental Specific Element.

	N.	S.	E.	W.	Not N.	Not E.
Monocotyledones	86.2	47.4	93.9	76.7	13.8	6.1
Archichlamydeae	83.1	50.0	93.0	70.7	16.9	7.0
Metachlamydeae	76.1	57.7	92.9	80.2	23.9	7.1
Total element	85.9	50.7	93.3	75.4	14.1	6.7

In the first table there appears in the third column of figures a further verification of the statements previously advanced regarding the relative extent of distribution of the Monocotyledones, as a group, and of the Metachlamydeae. While 34.7 per cent. of all monocotyledonous species are of extra-continental range, 28.3 per cent. of the Archichlamydeae, and but 18.6 per cent. of the Metachlamydeae are of such range. The Archichlamydeae, from their absolute numerical preponderance, form the largest percentage of the extra continental element. The Metachlamydeae, both absolutely and according to their number, form the smallest percentage. A comparison with the table which gives the general taxonomic-group percentages of the total valley species will be instructive. While the Monocotyledones form 28.4 per cent. of the total species they form 36.5 per cent. of the extra-continental species; while the Archichlamydeae form 31.9 per cent. of the total species they form 41.0 per cent. of the extra-continental element, and while the Metachlamydeae form 32.3 per cent. of the total flora, they form but 22.5 per cent. of the extra-continental element. This element shows, when compared with the general flora, a falling off in Metachlamydeae and a concurrent increase of Monocotyledones and Archichlamydeae. The increase is greatest among the Monocotyledones.

In the second of the last three tables the distribution by countries of the extra-continental element is indicated. The percentages are fairly exact except in the case of the West Indies. Of this region access has been had only to Grisebach's *Flora of the British West Indies.* The percentage is probably somewhat too small, but would in any event be likely to be the smallest of the series. It is seen that the extra-continental element is preponderantly Asiatic, and of the Asiatic group the Manchurian-Japanese forms a considerable percentage. Subtracting this percentage from the total Asiatic percentage gives 54.2 per cent. as the approximate Siberian element. This division of the Asiatic element is a proper one and the two groups of extra-continental species thus isolated would be interesting in detailed comparison. Such comparison would, however, be a little removed from the purpose of the chapter. A glance at the table will show several curious facts that may be noted. The Siberian group furnishes a larger percentage of Monocotyledones and smaller percentage of Metachlamydeae, comparatively, than the Japanese-Manchurian. The African element is almost as large as the South American or Australasian, and for the most part consists of the same plants. In all three the preponderant taxonomic group is the Monocotyledones, and of these it is especially the aquatic or marsh forms that are thus widely distributed. In these three distant elements the monocotyledonous percentage is somewhat in advance of such general percentages of the whole extra-continental element. Especially in the most distant element, the Australasian, are the Monocotyledones predominant. Of this element they form 66.6 per cent. Of the European element the Monocotyledones form a larger percentage than of the Asiatic, while of the Asiatic element the Archichlamydeae and Metachlamydeae form each a larger percentage than of the European. Of the Manchurian-Japanese element the Archichlamydeae and Metachlamydeae each form a larger percentage than of the Siberian or total Asiatic.

The third table of the series showing the North American range of extra-continental Minnesota valley metaspermic species and varieties presents some interesting percentages. Of the total element 85.9 per cent are northern and 50.7 per cent southern in North America. Comparing with the general tables of the entire flora, we find that 55.6 per cent of the species are northern while 76.1 per cent are southern. This indicates the predominent northern character of the extra continental specific element. Its presence in the Minnesota valley is therefore principally to be referred to the influence of the Conifer region of Engler or the Northern of Drude, which lies just above the latitude of the Minnesota valley. Of the extra-continental element 93.3 per cent. is eastern and 75.4 per cent. western. Comparing again the tables for the entire metaspermic flora we find that 87.2 per cent. are eastern and 51.4 per cent. western. The difference between the general percentages is therefore greater than between the extra-continental percentages. This indicates a more general latitudinal distribution of extra-continentally ranging species than of the average species of the valley. Since, however, this extra-continental element is so preponderantly northern the longitudinal distribution is not equal to the average longitudinal distribution. The extra-continental element is therefore distinctively lateral rather than vertical in its charactistic inter-continental distribution.

Besides the comparison of totals, the comparative distribution of the three taxonomic groups will be worth a moment's attention. Of the total specific elements the Monocotyledones run 68.2 per cent. northern, 69.1 per cent. southern, 93.6 per cent. eastern, 53.1 per cent. western. Of the extra-continental element the Monocotyledones run 86.2 per cent. northern, 47.4 per cent. southern, 93.9 per cent. eastern, 76.7 per cent. western. These figures indicate for the extra-continental Monocotyledones an increase in average northernness and a decrease in average longitudinal equality of distribution, together with an increase of lateral equality of distribution.

Of the total specific elements the Archichlamydeae run 55.9 per cent. northern, 75.1 per cent. southern, 86.1 per cent. eastern, 49.6 per cent. western. Of the extra-continental specific element the Archichlamydeae run 83.1 per cent. northern, 50.0 per cent. southern, 93.0 per cent. eastern, 70.7 per cent. western. These figures preserve an exact parallelism with those of the Monocotyledones, but with varying internal ratios. The east and west distribution of the Monocotyledones of the extra-continental element indicated by the figures 93.9 and 76.7 is more even than that of the Archichlamydeae of that element, indicated by the figures 93.0 and 70.7. On the other hand the north and south distribution of the Archichlamydeae of the extra-continental element is more even than that of the Monocotyledones, as indicated respectively, by the relations between the figures 83.1—50.0 and 86.2—47.4. But in comparison with the general specific elements we see, as for the Monocotyledones, an increase in average northernness, a decrease in average longitudinal equality of distribution and an increase of lateral equality.

Of the total specific elements the Metachlamydeae run 41.6 per cent. northern, 83.9 per cent. southern, 82.9 per cent. eastern, 51.9 per cent. western. Of the extra-continental element they run 76.1 per cent. northern, 57.7 per cent. southern, 92.9 per cent. eastern and 80.2 per cent. western. Of the three taxonomic groups, then, the Metachlamydeae show the greatest evenness of longitudinal distribution. In other words, this group is least concerned in the northern-region influence. Further the Metachlamydeae are most evenly distributed east and west, of the extra-continental groups. As before, however, but with diminished ratios, the Metachlamydeae, in comparison with the Metachlamydeae of the total specific elements, show an increase in average northernness, a decrease in average longitudinal equality of distribution, an increase in average lateral equality of distribution. These three indices of extra-continental ranging in its relation to intra continental distribution reduce themselves to this: The extra-continental element is more widely distributed intra-continentally than the general intra-continental element. It is more evenly distributed laterally and less evenly distributed longitudinally. The three taxonomic groups are in any case of different value in relative cosmopolitan or endemic distribution. These differences persist and are accentuated in the extra-continental element. Since the endemic character is at once preponderantly metachlamydeous and also of the Central element, it happens that the longitudinal distribution of extra-continental Metachlamydeae is more even than that of the other two groups, for the general southern and specific northern influences are best able in this group to neutralise each other.

From the above condensed account of the extra continental specific element it will be seen that every figure, in comparison or alone, is able to cast some additional light on the general problems of metaspermic history. Many other comparisons might be made and some of them would prove of definite value, but enough has already been brought forward to lay the foundation of our understanding of the relations between the extra-continental element in its outside and inside ranging and in its connection with the general flora.

The combination-ranges have not been worked out for the extra-continental element, but one or two facts are evident from the general survey of table E. For example the SE. range is particularly noticeable in the Manchurian–Japanese element and the NEW. range, in the Siberian or European element. The SW. range is not unprevalent in the South American element. The wider extra-continental ranges are generally coördinate with the wider intra-continental ranges, and *vice versa.* The explanation of the SE. preponderant-range of the Japanese-Manchurian element has been given as follows: The North American species which are found also in Japan, Manchuria and China were originally northwest in their American distribution. During the glacial period they were forced southeast along the lake-region trench of Canada and the boundary, thus reaching the Atlantic coast in the vicinity of New York or Delaware. Those which were pushed more directly south or west were destroyed through their inability to acclimate themselves at constantly higher altitudes. Only those which moved down the trench, and consequently southeast, were able to survive. The plants across Berings Straits were similarly induced to move southward into the unglaciated island of Japan, or into China and the Amur. There was thus brought about a division of the original northwest element in such a way that part of it became southeastern in North America and the rest eastern or north eastern in Asia. The relation between the Japanese-Manchurian region and the eastern North American is therefore to be explained from Tertiary and post-Tertiary wanderings, from glacial dispersions and from topographical peculiarities of the two continents concerned. All this has been ably discussed by Gray, Miquel, Nathorst, Saporta, Engler, Heer and others.

A general table of range may now be presented; it is compiled from Table D. and gives the number of species in each family that range north, east, south and west, and the total number of species in each family. This table will serve as a termination of this line of statistical enquiry and following it the physiognomic elements will briefly be examined.

F. Table Illustrating the Range of Minnesota Valley Metaspermae, by Families and Species.

	North	South	East	West	Total
Monocotyledones.					
Typhaceae	1	1	1	1	1
Sparganiaceae	3	2	3	2	3
Potamogetonaceae	15	11	16	13	16
Najadaceae	1	1	1	1	1
Juncagineae	3	0	3	3	3
Alismaceae	2	2	4	2	4
Hydrocharitaceae	1	2	2	1	2
Gramineae	48	66	71	58	89
Cyperaceae	89	80	116	63	118
Aroideae	4	2	4	0	4
Lemnaceae	4	6	6	2	6
Xyridaceae	0	1	1	0	1
Eriocaulaceae	1	0	1	0	1
Commelinaceae	0	1	1	0	1
Pontederiaceae	1	2	2	1	2
Juncaceae	9	6	11	5	11
Liliaceae	17	28	35	11	36
Amaryllidaceae	0	1	1	0	1
Dioscoreaceae	0	1	1	0	1
Iridaceae	2	3	3	0	3
Orchidaceae	29	16	30	13	30
Archichlamydeae.					
Juglandaceae	1	4	4	0	4
Myricaceae	1	1	1	0	1
Salicaceae	17	8	16	11	17
Betulaceae	5	4	8	3	8
Fagaceae	1	5	5	0	5
Ulmaceae	1	4	4	1	4
Urticaceae	2	4	5	1	5
Moraceae	1	2	2	1	2
Santalaceae	3	0	2	3	3
Aristolochiaceae	1	1	2	0	2
Polygonaceae	12	19	22	14	23
Chenopodiaceae	4	3	5	3	5
Amarantaceae	0	3	2	1	3
Phytolaccaceae	0	1	1	0	1
Nyctaginaceae	0	3	0	3	3
Portulacaceae	1	2	2	3	3
Caryophyllaceae	6	6	11	8	11
Nymphaeaceae	2	5	5	2	5
Ceratophyllaceae	0	1	1	1	1
Ranunculaceae	32	19	40	28	42
Berberidaceae	1	2	2	0	2
Menispermaceae	1	1	1	0	1
Papaveraceae	5	4	7	3	7
Cruciferae	18	23	21	20	30
Capparidaceae	0	2	2	2	2
Sarraceniaceae	1	0	1	1	1
Droseraceae	3	0	2	3	3
Crassulaceae	0	1	1	0	1
Saxifragaceae	9	9	14	8	14
Rosaceae	40	32	47	28	54
Leguminosae	17	51	37	26	55
Geraniaceae	2	2	2	1	2

F. Table Illustrating the Range of Minnesota Valley Metaspermae, by Families and Species.—*Continued.*

	North	South	East	West	Total
Oxalidaceae	0	2	1	2	2
Linaceae	1	3	1	3	3
Rutaceae	1	2	2	0	2
Polygalaceae	2	6	6	1	6
Euphorbiaceae	2	11	4	8	11
Stellariaceae	1	1	1	1	1
Anacardiaceae	0	5	5	0	5
Celastraceae	1	2	2	0	2
Aquifoliaceae	1	1	1	0	1
Staphyleaceae	1	1	1	0	1
Aceraceae	3	6	7	1	7
Balsaminaceae	2	1	2	2	2
Rhamnaceae	1	2	3	1	3
Vitaceae	0	4	4	0	4
Tiliaceae	1	1	1	0	1
Malvaceae	0	4	3	1	4
Hypericaceae	3	7	7	0	7
Cistaceae	1	2	2	0	2
Violaceae	9	11	14	5	15
Cactaceae	0	3	1	2	3
Thymelaeaceae	0	1	1	0	1
Elaeagnaceae	2	1	1	1	2
Lythraceae	0	1	1	0	1
Oenotheraceae	12	11	13	12	17
Halorrhagidaceae	2	4	4	1	4
Araliaceae	5	4	5	1	5
Umbelliferae	11	20	21	10	22
Cornaceae	4	5	7	2	7
Metachlamydeae.					
Pirolaceae	7	4	8	7	8
Ericaceae	10	1	11	7	11
Primulaceae	4	6	7	4	8
Oleaceae	0	4	4	1	4
Gentianaceae	4	6	10	3	10
Apocynaceae	0	2	2	2	2
Asclepiadaceae	2	14	10	5	14
Convolvulaceae	1	8	8	5	9
Polemoniaceae	1	5	5	1	6
Hydrophyllaceae	2	4	4	2	4
Borraginaceae	2	12	9	5	12
Verbenaceae	1	6	4	4	6
Labiatae	12	18	21	13	24
Solanaceae	2	6	7	3	7
Scrophulariaceae	8	27	27	17	32
Lentibulariaceae	3	2	4	3	4
Orobanchaceae	0	3	2	3	3
Plantaginaceae	1	3	2	2	3
Rubiaceae	7	9	11	4	11
Caprifoliaceae,	10	8	14	9	15
Adoxaceae	1	0	1	1	1
Valerianaceae	0	3	3	1	3
Cucurbitaceae	1	2	2	1	2
Campanulaceae	4	7	9	3	9
Compositae	66	158	131	92	173

IV. EXAMINATION OF PHYSIOGNOMIC CHARACTERS OF THE METASPERMIC PLANTS OF THE MINNESOTA VALLEY.

The plant-physiognomy of any district is determined by the habits and habitats of its plants. Without entering upon exhaustive analyses of the principal physiognomic groups—the forest and the prairie—it will be possible, nevertheless, to isolate three groups of species of characteristic habit and three others of characteristic habitat. The first three elements will then be as follows:

A. The Arboreal element.
B. The Shrubby element.
C. The Herbaceous element.

Evidently transitional forms must be recognised between these groups, but in general a classification may be attempted of all species into one or another of the groups themselves. The character of a principal woody trunk is considered to indicate the tree, if this coexists with a sufficient size. The woody character without the principal trunk is deemed characteristic of the shrub, and the absence of a distinctly woody stem is considered characteristic of the herb. Of course all Metaspermæ contain woody tissue in greater or less abundance. If, however, the cambium cylinders are not developed, the plant is generally characterised as herbaceous.

Of the three habitat elements the classification may be as follows:

A. The Aquatic element.
B. The Swamp and Marsh element.
C. The Drier-soil element.

As before, there are transitional forms between these groups and the entry of a given species may be difficult. Indeed in the same species certain individuals may be aquatic, and others may be found in more terrestrial localities. As in the case of the habit elements there is, then, some difficulty in obtaining a rigid classification. In the following tables two elements are unlisted—the herbaceous and the drier-soil elements. This is because these elements are in the nature of residua and may be understood closely enough from the other four elements that are listed. The following table gives a list of arboreal plants found growing spontaneously and indigenously in the valley of the Minnesota.

G. Table of Arboreal Metaspermae Indigenous to the Minnesota Valley.

Archichlamydeae.

se. Juglans nigra.
nse. Juglans cinerea.
se. Scoria minima.
se. Scoria ovata.
nsew. Populus monilifera.
new. Populus balsamifera.
new. Populus tremuloides.
nse. Populus grandidentata.
nsew. Salix nigra.
nsw. Salix amygdaloides.
se. Carpinus caroliniana.
se. Ostrya ostrya.
se. Betula nigra.
new. Betula papyrifera.
se. Quercus velutina.
se. Quercus rubra.
se. Quercus muhlenbergii.
nse. Quercus macrocarpa.
se. Quercus alba.
nse. Ulmus racemosa.
se. Ulmus americana.
se. Ulmus fulva.
sew. Celtis occidentalis.
se. Morus rubra.
new. Pirus sambucifolia.
se. Pirus coronaria.
nw. Amelanchier alnifolia.
se. Amelanchier canadensis.
nsew. Amelanchier canadensis var. obovalis.
se. Crataegus crus-galli.
se. Crataegus coccinea.
se. Crataegus mollis.
se. Crataegus tomentosa.
se. Prunus americana.
se. Cerasus serotina.
nsew. Cerasus virginiana.
new. Cerasus pennsylvanica.
se. Gymnocladus dioicus.
se. Rhus typhina.
sew. Acer negundo.
se. Acer rubrum.
nse. Acer barbatum.
se. Acer barbatum var. nigrum.
se. Acer saccharinum.
ne. Acer spicatum.
nse. Acer pennsylvanicum.
nse. Tilia americana.
nse. Cornus alternifolia.

Metachlamydeae.

sew. Fraxinus sambucifolia.
se. Fraxinus pubescens.
se. Fraxinus viridis.
se. Fraxinus americana.
new. Viburnum opŭlus.
se. Viburnum dentatum.
nse. Viburnum lentago.

From the preceding table the following statistic tabulation is compiled:

32. The Arboreal Specific Element.

	No. of species.	Per cent. of all arb. species.	Arb. per cent. of each.
Monocotyledones	0	0	0
Archichlamydeae	48	86.7	10.0
Metachlamydeae	7	13.2	1.8
Total Arboreal	55	....	....
Arb. per cent. of all species	4.7	....	....

Succeeding the arboreal element must be noted the shrubby element. Of this, Table H presents the list.

H. Table of Shrubby Metaspermae Indigenous to the Minnesota Valley.

Monocotyledones.

se. Smilax hispida.
se. Smilax rotundifolia.

Archichlamydeae.

nse. Myrica asplenifolia.
new. Salix myrtilloides.
new. Salix cordata.
nse. Salix cordata var angustata.
ne. Salix candida.
new. Salix petiolaris.
nse. Salix tristis.
nse. Salix humilis.
nse. Salix discolor.
new. Salix rostrata.
new. Salix longifolia.
new. Salix lucida.
new. Corylus rostrata.
nse Corylus americana.
ne. Betula pumila,
new. Alnus incana.
new. Comandra livida.
new. Comandra umbellata.
nw. Comandra pallida.
nse. Menispermum canadense.
new. Ribes rubrum var. albinervium.
nse. Ribes floridum.
new. Ribes oxycanthoides.
sew. Ribes gracile.
sew. Ribes cynobasti.
nsew. Opulaster opulifolius.
nse. Spiræa tomentosa.
nse. Celastrus scandens.
nse. Ilex verticillata.
nse. Staphylea trifolia.
sew. Ceanothus ovatus.
se Ceanothus americanus.
ne Rhamnus alnifolia.
se. Parthenocissus quinquefolia.
se Vitis aestivalis.
se. Vitis riparia.
se. Vitis cordifolia.
se. Hypericum prolificum.
se. Dirca palustris.
new. Spiraea salicifolia.
se. Pirus arbutifolia.
nse. Rubus hispidus.
ne. Rubus canadensis.
nse. Rubus villosus.
new. Rubus occidentalis.
new. Rubus strigosus.
new. Rubus triflorus.
new. Potentilla tridentata.
new. Potentilla fruticosa.
nse. Rosa humilis.
se. Rosa carolina.
nsw. Rosa pisocarpa.
nw. Rosa acicularis.
new Rosa virginiana.
sw. Rosa virginiana var. arkansana.
nse. Cerasus pumila.
nsw. Amorpha canescens.
nsw. Amorpha microphylla.
sew. Amorpha fruticosa.
nse. Zanthoxylum americanum.
se. Ptelea trifoliata.
se. Rhus radicans.
se. Rhus copallina.
se. Rhus vernix.
se. Rhus glabra.
se. Evonymus atropurpureus.
nsw. Leptargyraia argentea.
ne. Elæagnus argentea.
sw. Oenothera serrulata.
new Cornus canadensis.
se. Cornus candidissima.
se. Cornus asperifolia.
new. Cornus stolonifera.
se. Cornus sericea.
nse. Cornus circinatus.

Metachlamydeae.

se. Pseva maculata.
nsew. Pseva umbellata.
new. Ledum latifolium.
new. Andromeda polifolia.
new. Lyonia calyculata.
new. Chiogenes hispidula.
new. Arctostaphylos uva-ursi.
new. Oxycoccus macrocarpus.
new. Oxycoccus oxycoccus.
ne. Vaccinium corymbosum var. amoenum.
ne. Vaccinium canadense.
ne. Vaccinium pennsylvanicum.
se. Vaccinium stamineum.
new. Linnaea borealis.
new. Symphoricarpos racemosus.
new. Symphoricarpos racemosus var. pauciflorus.
nw. Symphoricarpos occidentalis.
se. Symphoricarpos symphoricarpos.
new. Lonicera glauca.
nsew. Lonicera sullivantii.
new. Lonicera ciliata.
nse. Diervilla diervilla.
new. Sambucus racemosa.
sew. Sambucus canadensis.
se. Viburnum pubescens.
se. Viburnum dentatum.
nsw. Artemisia dracunculoides.

From Table H the following statistics are compiled:

33. The Shrubby Specific Element.

	No. of species.	Per cent. of all shrubby sp.	Shrubby per cent. of each.
Monocotyledones.............	2	1.9	0.6
Archichlamydeae	75	72.1	16.3
Metachlamydeae	27	25.9	7.1
Total Shrubby	104	....	....
Shrubby per cent. of all species	8.8	....	....

The remainder of the Metaspermae of the Minnesota valley may be classified as herbaceous, and of this element the statistics are as follows:

34. The Herbaceous Specific Element.

	No. of species.	Per cent. of all herbaceous.	Herbaceous per cent. of each.
Monocotyledones.............	331	32.4	99.4
Archichlamydeae............	340	33.4	74.0
Metachlamydeae	346	34.0	91.0
Total Herbaceous........	1017	....	....
Herb. per cent. of all species..	86.6	....	....

From the above three tabulations it is seen that the herbaceous per cent. of the Monocotyledones is generally in excess of the herbaceous per cents of the other two groups. And the woody percentage of the Archichlamydeæ is generally in excess of the woody percentages of the other two groups. In the latitude of the Minnesota valley many of the original monocotyledonous trees or shrubs have disappeared. All of the trees are gone and all but two of the shrubs have failed up to the present time to secure or regain a foothold. This we understand from the considerations indicated in the preceding chapter, where the original presence of palms and allied forms was discussed. On the other hand, the Metachlamydeæ with their 1.8 per cent. of trees and 7.1 percent. of shrubs have as yet failed to develop many shrubby or arboreal plants in this latitude. The antiquity and lower organisation of the Monocotyledones are therefore seen to have been reflected in the physiognomy of the valley to-day in a manner similar to that in which the recentness and higher organisation of the Metachlamydeæ have been reflected. The absence of monocotyledonous trees and shrubs is due to their having been obliterated ages ago by the stronger archichlamydeous forms, together with the geological progression of climatic and topographical changes. The absence of the metachlamydeous trees and shrubs, compared with the abundance of the Archichlamydeæ, is doubtless owing to entirely different causes. Not obliteration but failure to reach the valley is the explanation of their absence. Palæontological remains do not indicate that metachlamydeous trees or shrubs were ever before so abundant in the Minnesota valley as they are to-day. The same evidence shows that in the Cretaceous and Tertiary periods there *were* palms in the valley. Thus by direct evidence is corroborated what might *a priori* be derived from the study of modern distribution. Together with the predominant herbaceousness of the Monocotyledones must be read their antiquity and their preponderantly extra and intra-continental width of range. Together with the only less predominant herbaceousness of the Metachlamydeæ must be read their recentness and their preponderantly endemic and limited range. Thus the character of the other taxonomic group may be stated in terms as follows:

The Archichlamydeæ, forming 86.7 per cent. of the arboreal element and 72.1 per cent of the shrubby element have on the one hand had sufficient time to develop their habit and to reach the Minnesota valley, while on the other hand they are not to such an extent a lower group, nor so ancient that they have been erased from the distinctively extratropical regions. From both sides they have been favored in the development of arboreal characters, and for ages will doubtless maintain themselves in extratropical regions as the characteristic trees and shrubs, although ultimately, the logic of history would seem to destine them for extinction under the attack of arborescent *Senecios, Helianthi* or *Solidagos*, or of other composite or composite-like forms that had attained the arboreal habit.

The progression of percentages from Monocotyledones to Metachlamydeæ, as read in the last columns of the three preceding tabulations, gives interesting testimony to the correctness of the views (by no means new) that are presented in the paragraphs above. As compacted below this progression is certainly instructive.

	Arb. per cent.	Shrubby per cent.	Herb. per cent.
Monocotyledones	.0	0.6	99.4
Archichlamydeae	10.0	16.3	74.0
Metachlamydeae	1.8	7.1	91.0

The differences are widest between the monocotyledonous and least between the archichlamydeous percentages.

The three habitat-elements may now be considered. In Table J is listed the aquatic element.

J. Table of Aquatic Metaspermae Indigenous to the Minnesota Valley.

Monocotyledones.

nsew. Potamogeton natans.
nsew. Potamogeton fluitans.
nsew. Potamogeton amplifolius.
nse. Potamogeton perfoliatus.
new. Potamogeton heterophyllos.
nse. Potamogeton gramineus var. zizii.
se. Potamogeton illinoensis.
nsew. Potamogeton pusillus.
new. Potamogeton rutilus.
nsew. Potamogeton pectinatus.
nsew. Potamogeton lucens.
new. Potamogeton praelongus.
nsew. Potamogeton lanceolatus.
new. Potamogeton zosteraefolius.
new. Potamogeton foliosus.
nsew. Zanichellia palustris.
nsew. Najas flexilis.
nsew. Elodea canadensis.
se. Vallisneria spiralis.
se. Zizania aquatica.
new. Panicularia fluitans.
new. Scirpus fluviatilis.
nsew. Scirpus lacustris.
nsew. Heleocharis palustris.
nsew. Lemna minor.
nse. Lemna perpusilla.
nsew. Lemna trisulca
nsew. Lemna polyrhiza.
se. Grantia brasiliensis.
se. Grantia columbiana.
nse. Pontederia cordata.
sew. Heteranthera dubia.

Archichlamydeae.

se. Polygonum hydropiperoides.
nsew. Polygonum amphibium.
se. Nelumbo nelumbo.
sew. Brasenia peltata.
nse. Leuconymphaea reniformis.
se. Leuconymphaea ordorata.
nsew. Nymphaea advena.
sew. Ceratophyllum demersum.
new. Ranunculus lacustris.
nsew. Ranunculus aquatilis var. trichophyllos.
new. Ranunculus aquatilis var. caespitosus.
new. Ranunculus circinnatus.
nsew. Stellaria verna.
nsew. Hippuris vulgaris.
se. Myriophyllum heterophyllum
se. Myriophyllum verticillatum.
nse. Myriophyllum spicatum.

Metachlamydeae.

se. Nymphodes lacunosum.
sew. Mimulus glabratus var. jamesii.
new. Veronica anagallis.
se. Utricularia cornuta.
new. Utricularia intermedia.
new. Utricularia minor.
nsew. Utricularia vulgaris.
nse. Bidens beckii.

The swamp and marsh element may next be listed.

K. Table of Swamp and Marsh Metaspermae Indigenous to the Minnesota Valley.

Monocotyledones.

nsew. Typha latifolia.
new. Sparganium simplex.
nsew. Sparganium androcladum.
nse. Sparganium eurycarpum.
new. Triglochin palustris.
new. Triglochin maritima.
new. Scheuchzeria palustris.
new. Alisma plantago.
se. Sagittaria rigida.
se. Sagittaria graminea.
new. Sagittaria sagittaefolia.
se. Panicum crus-galli.
se. Zizania aquatica var. hispidum.
nsew. Homalocenchrus oryzoides.
se. Homalocenchrus virginicus.
new. Phalaris arundinacea.
new. Hierochloë odorata var. fragrans.
nsew. Muhlenbergia racemosa.
nsew. Alopecurus geniculatus var. aristulatus.
nsew. Cinna arundinacea.
nw. Beckmannia erucaeformis.
nsew. Phragmites phragmites.
new. Poa palustris.
nw. Scolochloa festucacea.
new. Panicularia americana.
nsew. Panicularia nervata.
ne. Panicularia elongata.
ne. Panicularia canadensis.
nsew. Dulichium spathaceum.
nsew. Cyperus strigosus.
nse. Eriophorum virginicum.
new. Eriophorum gracile.
new. Eriophorum latifolium.
new. Eriophorum polystachion.
new. Eriophorum vaginatum.
new. Eriophorum cyperinum.
sew. Eriophorum lineatum.
nsew. Scirpus atrovirens.
nw. Scirpus sylvaticus var. microcarpus.
nsew. Scirpus triangularis.
sw. Heleocharis wolfii.
nsew. Heleocharis acicularis.
nse. Heleocharis tenuis.
nse. Heleocharis intermedia.
se. Heleocharis acuminata.
nsew. Heleocharis palustris.
se. Heleocharis palustris var. glaucescens.
nsew. Heleocharis ovata.
sew. Mariscus mariscoides.
nse. Rhyncospora setacea.
nsew. Rhyncospora alba.
se. Scleria verticillata.
se. Scleria triglomerata.
nsew. Carex tribuloides var. cristata.
nse. Carex muskingumensis.
ne. Carex trisperma.
ne. Carex tenuiflora.
new. Carex canescens.
nsew. Carex echinata var. radiata.
nse. Carex rosea.
nse. Carex rosea var. radiata.
new. Carex tenella.
new. Carex teretiuscula.
new Carex teretiuscula var. ramosa.
se. Carex crus-corvi.
ne. Carex chordorhiza.
nsew. Carex polytrichoides.
se. Carex laxiflora.
new. Carex flava var. viridula.
nse. Carex crawei.
se. Carex granularis.
se. Carex davisii.
nse. Carex gracillima.
new. Carex limosa.
new. Carex magellanica.
nse. Carex crinita.
nse. Carex prasina.
new. Carex aquatilis.
nsew. Carex fusca.
nse. Carex riparia.
nse. Carex trichocarpa.
new. Carex trichocarpa var. aristata
new. Carex filiformis.
nsew. Carex filiformis var. lanuginosa.
se. Carex squarrosa.
ne. Carex pseudocyperus.
nsew. Carex pseudocyperus var. americana.
nse. Carex hystricina.
nse. Carex schweinitzii.
nse. Carex lurida.
new. Carex retrorsa.
ne. Carex tuckermani.
nsew. Carex monile.
nsew. Carex utriculata.
new. Carex oligosperma.
nse. Carex lupulina.
se. Carex lupulina var. longipedunculata.
nse. Carex intumescens.
new. Carex pauciflora.
nse. Acorus calamus.
ne. Spathyema foetida.
ne. Calla palustris.
ne. Eriocaulon septangulare.
nsew. Juncus tenuis.
new. Juncus vaseyi.
new. Juncus balticus var. littoralis.

new. Juncus filiformis.
nsew. Juncus effusus.
new. Juncus nodosus var. genuinus.
sew. Juncus nodosus var. megacephalus.
new. Juncus canadensis var. coarctatus.
nse. Juncus canadensis var. longecaudatus.
se. Juncus acuminatus var. legitimus
se. Melanthium virginicum.
new. Veratrum viride.
se. Lilium canadense.
new. Clintonia borealis.
new. Unifolium bifolium.
new. Unifolium trifolium.
se. Iris versicolor.
new. Cypripedilum acaule.
nse. Cypripedilum spectabile.
nsew. Cypripedilum pubescens.
new. Cypripedilum parviflorum.
nsew. Cypripedilum candidum.
ne. Cypripedilum arietinum.
nse. Habenaria psycodes.
nse. Habenaria lacera.
ne. Habenaria hookeriana.
new. Habenaria dilatata.
new. Habenaria hyperborea.
new. Habenaria bracteata.
nse. Habenaria flava.
nse. Habenaria tridentata.
nse. Pogonia ophioglossoides.
ne. Arethusa bulbosa.
nse. Gyrostachys cernua.
new. Gyrostachys romanzowiana.
ne. Leptorchis loeselii.
se. Leptorchis liliifolia.
new. Corallorhiza corallorhiza.
nse. Cathea tuberosa.
nsew. Aplectrum spicatum.

Archichlamydeae.

nse. Populus grandidentata.
new. Salix myrtilloides.
new. Salix cordata.
nse. Salix cordata var. angustata.
ne. Betula pumila.
new. Alnus incana.
se. Rumex verticillatus.
new. Rumex salicifolius.
nsew. Rumex persicarioides.
se. Polygonum acre.
new. Polygonum hydropiper.
se. Polygonum hydropiperoides.
nsew. Polygonum hartwrightii.
sew. Polygonum emersum.
nsew. Polygonum incarnatum.
new. Stellularia crassifolia.
new. Caltha palustris.
new. Isopyrum trifolium.
nsew. Ranunculus sceleratus.
nsew. Ranunculus ambigens.
nsew. Nasturtium hispidum.
nsew. Nasturtium palustre.
nsew. Cardamine hirsuta.
se. Cardamine bulbosa.
new. Sarracenia purpurea.
nw. Drosera linearis.
new. Drosera intermedia var. americana.
new. Drosera rotundifolia.
se. Penthorum sedoides.
ne. Saxifraga pennsylvanica.
new. Mitella nuda.
se. Parnassia caroliniana.
new. Parnassia palustris.
nse. Spiraea tomentosa.
new. Spiraea salicifolia.
new. Potentilla fruticosa.
new. Potentilla palustris.
nse. Geum rivale.
nse. Rosa humilis.
se. Rosa carolina.
nsew. Lathyrus palustris.
nsew. Lathyrus palustris var. myrtifolius.
se. Rhus vernix.
se. Acer rubrum.
new. Impatiens biflora.
nsew. Impatiens aurea.
se. Hypericum canadense.
nse. Hypericum virginicum.
new. Viola sylvestris.
new. Viola blanda.
nse. Viola blanda var. amoena.
nsew. Isnardia palustris.
se. Isnardia polycarpa.
nse. Epilobium coloratum.
ne. Epilobium strictum.
new. Epilobium palustre.
new. Epilobium lineare.
new. Circaea alpina.
nsew. Heracleum lanatum.
ne. Cicuta bulbifera.
nsew. Cicuta virosa var. maculata.
nsew. Sium cicutaefolium.
new. Cornus canadensis.
new. Cornus stolonifera.
se. Cornus sericea.

Metachlamydeae.

nsew. Pirola elliptica.
new. Pirola rotundifolia.
new. Pirola rotundifolia var. uliginosa.
new. Lyonia calyculata.
new. Chiogenes hispidula.
new. Oxycoccus macrocarpus.
new. Oxycoccus oxycoccus.
ne. Vaccinium corymbosum var. amoenum.
ne. Vaccinium canadense.
new. Lysimachia thyrsiflora.
se. Steironema quadriflorum.
se. Steironema lanceolatum var. hybridum.
nsew. Steironema ciliatum.
ne. Trientalis americana.
new Menyanthes trifoliata.
se. Gentiana flavida.
se. Gentiana andrewsii.
new. Gentiana serrata.
ne. Gentiana americana.
se. Asclepias incarnata.
se. Phlox maculata.
nsew. Stachys palustris.
nsew. Lycopus sinuatus.
nsw. Lycopus lucidus var. obtusifolius.
se. Lycopus rubellus.
nsew. Lycopus virginicus.
new. Mentha canadensis.
se. Chelone glabra.
sew. Gratiola virginiana.
sew. Ilysanthes gratioloides.
new. Veronica scutellata.
new. Veronica americana.
se. Synthyris houghtoniana.
sew. Monniera rotundifolia.
nse. Galium asprellum.
nsew. Galium trifidum.
se. Galium trifidum var. latifolium.
ne. Campanula aparinoides.
new. Lobelia kalmii.
nsew. Eupatorium purpureum.
sew. Solidago riddellii.
ne. Solidago neglecta.
nsew. Aster puniceus.
nse. Aster puniceus var. lucidus.
se. Aster nova-belgii.
se. Aster vimineus.
sw. Helianthus maxmiliani.
se. Coreopsis aristosa.
sew. Bidens laevis.
nsew. Bidens cernua.
se. Bidens connata.
nsew. Helenium autumnale.
sw. Senecio lugens.
new. Senecio palustris.

Of the three habitat elements the following statistical tabulations are presented:

35. The Aquatic Element.

	No. of species.	Per cent. of all aquatic.	Aquatic per cent. of each.
Monocotyledones	32	56.1	9.6
Archichlamydeae	17	29.8	3.7
Metachlamydeae	8	14.0	2.1
Total Aquatic	57		
Aquatic per cent. of all species	4.9		

36. The Marsh and Swamp Element.

	No. of species.	Per cent. of all M. and S.	M. and S. per cent. of each.
Monocotyledones	145	54.8	43.8
Archichlamydeae	65	24.6	14.1
Metachlamydeae	54	20.4	14.1
Total M. and S.	264		
M. and S. per cent. of all species	22.5		

37. The Drier-Soil Element.

	No. of species.	Per cent. of all D. S.	D. S. per cent. of each.
Monocotyledones	157	18.2	47.0
Archichlamydeae	377	44.1	82.2
Metachlamydeae	319	37.7	83.8
Total Drier-soil	853		
D.-S. per cent. of all species	72.6		

In the aquatic element the preponderance of Monocotyledones is to be noted. This taxonomic group is also apparent as forming the greater percentage of the marsh and swamp element. On the other hand the Metachlamydeae are preponderant in the drier-soil element, although their percentage is practically equivalent to that of the Archichlamydeae. These statements are based upon the third column of figures, and thus correction is made for the actual numerical differences of the three taxonomic groups. In this way a more exact notion is given than if such correction was not made, and in general, it may be said that the analysis must always take into account the varying actual numbers of one group or another. In the marsh and swamp element we find an interesting confirmation, so far as these figures are of value in evidence, of the views stated on pp. 602-603 above, where the Cretaceous physiognomy is briefly discussed. It will be observed that the marsh and swamp element forms a percentage of the Metachlamydeae exactly equivalent to the similar percentage of the Archichlamydeae. In this case the explanation may be that the younger group of the Metachlamydeae furnishes so large a percentage of this element, comparatively, because the influence of the tensions is such that in a younger group many weaker plants will be forced into the morassic habitat. It is apparent that either the plants of new and variable type or the plants of an older and less plastic type will be less competent to struggle for the optimum habitat than a group of plants neither too modern nor too ancient. In the marsh and swamp percentages of the modern valley may therefore be read a word or two concerning those long-past ages when the Archichlamydeae in turn were similarly conditioned in their relations with the conifers of the old Cretaceous flora.

It will be interesting to examine the ranges in the continent of these two groups of physiognomic elements. Tabulations are readily compiled from Tables G, H, J and K. The following tabulation will serve to indicate in a general way the range peculiarities of the habit-elements:

38. Range-Statistics of the Habit-elements.	TREES.				SHRUBS.				HERBS.			
	Monocotyledones.	Archichlamydeae.	Metachlamydeae.	Totals.	Monocotyledones.	Archichlamydeae.	Metachlamydeae.	Totals.	Monocotyledones.	Archichlamydeae.	Metachlamydeae.	Totals.
Northern species	0	20	2	22	0	51	21	72	226	186	136	568
Southern species	0	41	6	47	2	47	10	59	227	256	303	786
Eastern species	0	46	7	53	2	67	25	94	308	283	284	875
Western species	0	13	2	15	0	34	18	52	176	182	178	536
Per cent. of all northern	0	90.9	9.1	100.	0	70.6	29.4	100.	39.7	32.7	27.6	100.
Per cent. of all southern	0	87.2	12.8	100	4.4	79.5	16.1	100.	28.8	32.5	38.7	100.
Per cent. of all eastern	0	86.7	13.3	100.	2.3	71.2	26.5	100.	34.1	32.3	33.6	100.
Per cent. of all western	0	86.3	13.7	100	0	65.3	34.7	100.	32.8	33.9	33.3	100.
Northern per cent. of each	0	41.6	29.5	40.0	0	68.0	77.7	69.1	68.2	54.7	39.3	55.8
Southern per cent. of each	0	85.4	95.7	85.4	100.	62.6	37.0	56.7	68.5	75.2	87.5	77.2
Eastern per cent. of each	0	95.8	100.	96.3	100.	39.3	92.6	90.3	93.0	83.2	82.0	86.0
Western per cent. of each	0	27.0	29.5	27.2	0	45.3	66.6	50.0	53.1	53.5	51.4	52.7
Total species	0	48	7	55	2	75	27	104	331	340	346	1017

Upon comparing the preceding table with the general tables of specific range on pp. 715-716, a number of instructive points will be discovered.

The trees of the Minnesota valley are much more distinctively southern than the general population. They are also much more distinctively eastern. This is readily noted by comparing the per cents of totals, for each element of range, in the general and the special tables. This southernness and easternness is more marked in the case of the metachlamydeous trees than of the archichlamydeous, but in either is in excess of the southern and eastern per cents of the total taxonomic groups. Conversely, the trees are decidedly less northern in their character than the general population. The Archichlamydeæ are, however, more northern than the Metachlamydeæ. Of the metachlamydeous trees a slightly larger percentage show the western range than of the archichlamydeous trees. This is due to the general lateral solidarity which has been pointed out as a characteristic of the Metachlamydeæ.

The shrubs of the Minnesota valley present opposite range characters, in comparison with the trees. They are more distinctly northern than southern and the northernness is in excess over that of the general population while the southernness is considerably less. Between the eastern and western per cents of the shrubby element and of the whole element there is less difference, but the shrubs are a trifle more eastern in character than the general flora. The northernness of the metachlamydeous shrubs is more pronounced than the northernness of the archichlamydeous shrubs, while the metachlamydeous shrubs are both more eastern and more western than the archichlamydeous. This, again, is a result of metachlamydeous lateral solidarity. The strong northernness of metachlamydeous shrubs is the most remarkable feature of shrub distribution in the valley of the Minnesota. It may perhaps be attributed to the influence of the tensions upon habit. The shrubby habit might be expected to emerge more strongly farthest from the Central region.

The herbs of the valley are distributed very much like the general element. The differences between the trees and shrubs serve to neutralise each other and the residuum is only slightly more northern, southern and western and only slightly less eastern than the total flora.

Passing next to the habitat elements a similar table of range statistics may be considered.

39. RANGE-STATISTICS OF THE HABITAT-ELEMENTS.	AQUATICS.				MARSH-PLANTS.				DRIER-SOIL PLANTS.			
	Monocotyledones.	Archichlamydeae.	Metachlamydeae.	Totals.	Monocotyledones.	Archichlamydeae.	Metachlamydeae.	Totals.	Monocotyledones.	Archichlamydeae.	Metachlamydeae.	Totals.
Northern species.........	26	10	5	41	119	52	33	204	81	195	121	397
Southern species.........	25	14	5	44	82	36	34	152	122	294	280	696
Eastern species...........	32	17	8	57	141	64	51	256	137	315	257	709
Western species..........	23	10	5	38	80	41	32	153	73	178	161	412
Per cent. of all northern.	63.4	24.3	12.3	100.	58.3	25.4	16.3	100.	20.4	49.1	30.5	100.
Per cent. of all southern.	56.8	31.8	11.4	100.	53.9	23.6	12.5	100.	17.5	42.2	40.3	100.
Per cent. of all eastern...	56.1	30.0	13.9	100.	55.0	24.6	10.4	100.	19.3	44.4	36.3	100.
Per cent. of all western..	60.5	26.3	13.2	100.	52.2	26.7	21.1	100.	17.7	43.2	39.1	100.
North'rn per cent of each	81.2	58.8	62.6	71.9	82.0	80.0	61.1	77.2	51.5	51.7	37.8	47.7
Southern per cent. of each	78.1	82.3	62.6	77.1	56.5	55.3	62.9	57.5	77.7	77.9	87.7	81.5
Eastern per cent. of each	100.	100.	100.	100.	97.2	98.4	94.4	96.9	87.2	83.5	80.5	83.1
Western per cent. of each	71.8	58.8	62.6	66.6	55.1	63.0	59.2	57.9	46.4	44.5	50.4	48.1
Total species...........	32	17	8	57	145	65	54	264	157	377	319	853

From the above table it is seen immediately that the aquatic plants are more general in their continental distribution than the marsh and swamp plants and these in turn more generally distributed than the drier-soil plants. The aquatics, however, are strongly eastern, presenting indeed their total number in this range; the marsh and swamp plants are only less eastern while the easternness of the drier-soil plants is the least of the three. The marsh-plants lead in northernness while the drier-soil plants excel in southernness. In westernness the ratios are similar to those of easternness, owing to the differences of general distribution. Comparing each element with the total flora we may note first the aquatics.

The aquatic element exceeds the total flora in all four elements of range. This indicates, in an accurate and instructive manner, the widely distributed character of aquatic plants. The southern per cent. of aquatic Metachlamydeae is, however, less than the southern per cent. of all Metachlamydeae, while the northern per cent. is considerably greater. Again there is necessity of explaining such a fact by the tension-lines and the law of ejections, and reciprocally the fact of distribution is of value as evidence of the soundness of the law.

The marsh-plants exceed the total flora in northernness easternness and westernness, but fall behind in southernness. Not yet fully distributed as are the aquatics, they indicate better the influence of the continental tension. Marsh plants in a given region of the northern hemisphere may be expected to present distal rather than central characters, for as has been discussed above, the tendency to adopt the morassic habitat is a distal or tension-line phenomenon. As might be expected where different forces are acting to determine the percentages one will often partly neutralise another. It is seen, for example, in the table, that the northern and southern percentages of the metachlamydeous marsh-plants are very close together, while the eastern and western percentages are not so close. This is just the reverse of the condition among the Metachlamydeae as a group, in the Minnesota-valley flora, and indicates the selective influence of habitat upon range. In the drier-soil element, on the other hand, the condition of the total flora reappears and is accentuated.

The drier-soil plants lead the total flora only in southernness, while in northernness, easternness and westernness they fall behind. Of the element, the Archichlamydeae lead in northernness, the Metachlamydeae in southernness, the Monocotyledones in easternness and the Metachlamydeae in westernness. The Archichlamydeae of the drier-soil are less northern, more southern, less eastern and less western than in the total element. The Metachlamydeae of the drier-soil are less northern more southern, less eastern and less western than in the total element. The Monocotyledones do not differ from the two groups mentioned, in this particular. That both the easternness and westernness of the drier-soil element should be decreased in all taxonomic groups indicates the wide east and west distribution of the two elements the removal of which leaves it as the residuum.

In general the study of the tables which indicate the range of the physiognomic elements will add weight to the belief that the three taxonomic groups are of different and distinct meaning in the distribution. Space scarcely permits as exhaustive an analysis as might be useful but enough has been noted in passing to show how a further and more complete analysis should properly proceed. Careful examination of the tables and comparison of their data throughout, with those in the general tables in the section preceding will serve to bring before the reader many kindred facts not mentioned in detail in these pages.

V. EXAMINATION OF DOMINANT METASPERMIC FAMILIES OF THE MINNESOTA VALLEY.

Such families as contain a relatively large number of species may be known as the dominant families of the district. Thirteen such families, each with twenty-two species in the valley, or more than twenty-two, may be recognised. The dominant families furnish 217 genera or 53.5 per cent. of all genera in the valley, and 727 species or 61.0 per cent. of the total valley species. In order of their importance they may be arranged as follows:

	Gen.	Spec.
Compositae	43	173
Cyperaceae	11	118
Gramineae	39	89
Leguminosae	21	55
Rosaceae	13	54
Ranunculaceae	11	42
Liliaceae	15	36
Scrophulariaceae	13	32
Orchidaceae	12	30
Cruciferae	10	30
Labiatae	14	21
Polygonaceae	2	23
Umbelliferae	13	22

Each of these families is represented in the valley by a group of species of a definite distributional and physiognomic character. To present these characters is the office of the two tabulations following. In the first, the generic statistics are compiled, in the second, the specific.

40. STATISTICS OF THE DOMINANT FAMILIES. *Generic.*	No. of genera.	No. cosmop gen.	No. extratrop. gen.	No. trop. and sub-trop. gen.	No.N.extratrop. gen.	No. W. Hemisphere gen.	No. N.American gen.	Per cent. of all cosmop. gen.	Per cent. of all extra trop. gen.	Per cent. of all trop. gen.	Per cent. of all N extratrop. gen.
Gramineae	39	13	13	4	7	4	4	12.1	19.6	8.0	5.2
Cyperaceae	11	5	1	3	2	0	1	4.6	1.6	6.0	1.5
Liliaceae	15	0	0	1	7	0	7	0	.0	2.0	5.2
Orchidaceae	12	4	1	2	5	0	2	3.7	1.6	4.0	3.7
Polygonaceae	2	1	0	1	1	0	0	.9	.0	2 0	.7
Ranunculaceae	11	2	3	0	6	0	0	1 8	4.9	0	4.5
Cruciferae	10	2	4	0	3	0	2	1.8	6.5	0	2 3
Rosaceae	13	1	2	2	11	0	0	.9	3.2	4.0	8.2
Leguminosae	21	8	2	4	6	1	3	7.4	3.2	8.0	4.5
Umbelliferae	13	3	4	1	3	0	4	2.8	65.	2 0	2.3
Labiatae	14	5	0	0	4	1	4	4.6	0	0	3.0
Scrophulariaceae	13	1	3	1	4	1	3	.9	4.9	2.0	3 0
Compositae	43	10	5	5	8	9	12	9.3	8.2	10.0	6.0
Total Dominant.	217	55	38	24	67	16	42	51.4	62.3	48.0	50.0

40.—Continued.

STATISTICS OF THE DOMINANT FAMILIES. *Generic.*	Per cent. of all W. Hem. gen.	Per cent. of all N. Amer. gen.	Cosmop. per cent. of each.	Extratrop. per cent. of each.	Trop per cent. of each.	N extratrop. per cent. of each.	W Hem. per cent. of each	N. Amer. per cent. of each.	No. northern genera.	No. southern genera.	No. eastern genera.	No. western genera.	Per cent of all N. genera.	Per cent. of all S. genera.	Per cent. of all E. genera.	Per cent. of all W genera.	Northern per cent. of each.	Southern per cent. of each.	Eastern per cent of each.	Western per cent. of each.	Per cent. of all gen. in valley.
Gramineae........	12.5	6.2	33.3	33.3	10.2	17.0	10.2	10 2	21	21	27	17	12.2	8.2	10.0	9.2	53.8	53.8	69.8	43.5	9.5
Cyperaceae	0	1.5	45 4	9.0	27.2	18.0	0	9.0	2	9	11	2	1.2	3 5	4.0	1.0	18.1	81.8	100.	18.1	2.4
Liliaceae..........	1.0	10.9	0	0	6.6	46.6	0	46.6	6	9	12	6	3.7	3.5	4.4	3.2	40.0	60.0	80.0	40 0	3.4
Orchidaceae.	0	3 1	33.3	8.3	16 6	41.6	0	16.6	8	7	11	1	4.8	2.7	4.0	.5	66.6	58.3	91.6	8.3	2.9
Polygonaceae	0	0	50.0	0	50.0	50.0	0	0	1	1	0	2	.6	.4	0	1.0	50.0	50.0	0	100.	.4
Ranunculaceae...	0	0	18 1	27 2	0	54.4	0	0	9	2	6	7	5.5	.8	2.2	3.8	81.8	18.1	54.5	63.6	2.4
Cruciferae.........	0	3.1	20.0	40.0	0	30.0	0	20.0	6	4	2	9	3.7	1.7	.7	4.9	60.0	40.0	20.0	90.0	2.4
Rosaceae	0	0	7.6	15.2	15 2	84.5	0	0	8	5	11	4	4.8	2.0	4 0	2.1	61.5	38.4	84.5	30.7	3.2
Leguminosae......	3.1	4.7	38.1	9.5	19.0	27.5	4 7	14.3	2	19	11	10	1.2	7.4	4.0	5.4	9.5	90.5	52.3	47.6	5.1
Umbelliferae.....	0	6.2	23.0	30.7	7.6	23.0	0	30.7	4	11	7	9	2.4	4.3	2 5	4 9	30.7	84.5	53.8	69.2	3.2
Labiatae	3.1	6.2	35.7	0	0	28.5	7.1	28.5	4	11	12	5	2.4	4.3	4.4	2.7	28.5	78.5	85.7	35.7	3.4
Scrophulariaceae	3.1	4.7	7.6	22.8	7 6	30 7	7 6	22.8	5	8	7	7	3.0	3.4	2.5	3.8	38.4	38.4	53.8	53.8	3.2
Compositae.......	28.1	18.7	23.2	11.6	11.6	18.6	20.9	25.8	12	31	10	26	7.2	12.2	7.0	14.2	27.8	72.0	44.1	60.4	10.5
Total Dominant.	56 0	65.0	25.3	17.5	11.0	30.8	7 3	19.3	88	138	136	105	54.3	54.3	50.3	57.3	40.5	63.5	62.6	48.4	53.5

41. STATISTICS OF THE DOMINANT FAMILIES. *Specific.*	No. of species in valley.	Per cent of all valley species.	Species of N. range.	Species of S. range.	Species of E range.	Species of W. range.	Per cent. of all N. species in valley.	Per cent. of all S. species in valley.	Per cent. of all E. species in valley.	Per cent. of all W. species in valley.	N. per cent of each.	S. per cent. of each.	E. per cent. of each.	W. per cent. of each.	No. of S. E. species.	No. of S. W. species.	No. of S.E.W. species.	No. of N. W. species.
Gramineae	89	7.5	48	66	71	58	7.4	7.4	6.9	9.6	53.9	74.1	79.8	65.1	20	10	10	5
Cyperaceae	118	10.0	89	80	116	63	13.8	7.9	11.3	10.4	75.4	67.7	98.3	53.3	18	1	10	1
Liliaceae	36	3.0	17	28	35	11	2.6	3.1	3.4	1.8	46.1	77.7	97.2	30.5	19	0	0	0
Orchidaceae	30	2.5	29	16	30	13	4.5	1.7	2.9	2.1	96.6	53.3	100.0	43.3	1	0	0	0
Polygonaceae	23	1.8	12	19	22	14	1.8	2.1	2.1	2.2	54.5	86.3	100.0	63.6	5	0	5	0
Ranunculaceae	42	3.5	32	19	40	28	4.9	2.1	3.9	4.7	76.1	45.2	95.2	66.6	7	0	1	2
Cruciferae	30	2.5	18	23	21	20	2.7	2.5	2.0	3.3	60.0	76.6	70.0	66.6	7	3	0	3
Rosaceae	54	4.6	40	32	47	28	6.2	3.5	4.6	4.7	74.0	59.2	87.0	51.8	13	1	0	3
Leguminosae	55	4.6	17	51	37	26	2.6	5.7	3.6	4.3	30.9	92.7	67.2	47.2	26	12	1	2
Umbelliferae.	22	1.8	11	20	21	10	1.7	2.2	2.0	1.6	50.0	90.9	95.4	45.4	6	1	3	0
Labiatae	24	2.0	12	18	21	13	1.8	2.1	2.0	2.1	50.0	75.5	87.5	54.1	10	1	1	0
Scrophulariaceae	32	2.7	8	27	27	17	1.2	3.0	2.6	2.8	25.0	84.3	84.3	53.1	14	4	6	0
Compositae	173	14.7	66	158	131	92	10.2	17.6	12.7	15.2	38.1	91.3	75.7	53.1	54	26	21	4
Total Dominant	727	61.0	399	557	619	393	62.1	62 4	60.5	65.1	54.8	76.6	85.1	54.0	192	59	58	22

41 – *Continued.* STATISTICS OF THE DOMINANT FAMILIES. *Specific.*	No. N. E. species.	No. N. S. E. species.	No. N. S. W. species.	No. N. E. W. species.	No. N. S. E. W. spe's.	Per cent. of all S. E. species in valley.	Per cent. of all S. W. species in valley.	Per cent. all S. E. W. species in valley.	Per cent. of all N. W. species in valley	Per cent. of all N. E. species in valley.	Per cent. all N. S. E. species in valley.	Per cent all N. S. W. species in valley.	Per cent. all N. E. W. species in valley.	Per ct. all N. S. E. W. species in valley.	S. E. per cent. of each.	S. W. per cent. of each.	S. E. W. per cent. of each.	N. W. per cent. of each.	N. E. per cent. of each.	N. S. E. per cent. of each.
Gramineae	3	4	0	14	15	5.7	11.4	10.0	17.6	5.3	2.5	0	7.1	10.0	22.4	11.2	11.2	5.6	3 3	4.4
Cyperaceae	10	24	1	26	20	5.1	1.1	10.0	3 5	17.7	15.0	2 5	13.4	14.4	15.2	.8	8.6	.8	8.6	20.3
Liliaceae	0	6	1	8	2	5.4	0	0	0	0	3.7	2.5	4.0	1.4	52 8	0	0	0	0	16.6
Orchidaceae	4	12	0	9	3	.3	0	0	0	5.3	7.5	0	4 5	2.0	3.0	0	0	0	13.3	39.9
Polygonaceae	1	3	0	2	6	1.4	0	5 0	0	1.7	1.8	0	1.0	4.0	22.7	0	22.7	0	4 5	14.6
Ranunculaceae	1	4	0	20	5	2.0	0	1.0	8.1	1.7	2.5	0	10.0	3.3	16.6	0	2.4	4.8	2.4	9.6
Cruciferae	0	2	1	3	6	2.0	3.4	0	10.7	0	1.2	2.5	1.5	4.0	23.3	10.0	0	10.0	.0	6.6
Rosaceae	2	10	2	14	6	3.7	1 1	0	10.7	3.4	6.0	5.0	7.1	4.0	24 0	1.8	0	5.4	3.6	18.5
Leguminosae	1	1	5	1	4	7.4	13.7	1.0	8.1	1.7	.6	12.5	.5	2.8	47.2	21.8	1.8	3.6	1.8	1.8
Umbelliferae	1	3	0	0	5	1.7	1.1	3.0	0	1.7	1.8	0	0	3.3	27.2	4.5	13 6	0	4 5	13.6
Labiatae	0	1	1	5	4	2.8	1.1	1.0	0	0	.6	2.5	2.5	2.8	41.6	4.1	4.1	0	0	4.1
Scrophulariaceae	0	1	1	5	1	4.0	4.5	6.0	0	0	.6	2.5	2.5	.7	43.7	12.5	18.7	0	0	3.1
Compositae	2	18	10	8	15	15.4	29.8	21.0	14.2	3.4	12.1	25.6	4.0	10.0	31 2	15.0	12.1	2 3	1.2	10.4
Total Dominant	25	89	22	115	92	54.8	67.8	58.0	78.5	41.0	55.2	56.4	58.6	61.3	26.4	8.1	8.2	3.0	3.4	10.8

41—*Continued.* STATISTICS OF THE DOMINANT FAMILIES. *Specific.*	N S. W. per cent. of each.	N E W. per cent. of each.	N S. E W. per cent. of each.	No extra-cont. species.	Per cent of all extra-cont. species in valley.	Extra-cont. per cent. of each.	No. arboreal species.	No shrubby species	No. herbaceous species.	Per cent of all arboreal species in valley.	Per cent. of all shrubby species in valley.	Per cent. of all herbaceous species in valley.	Arboreal per cent. of each.	Shrubby per cent. of each.	Herbaceous per cent. of each	No of marsh and swamp species.	No. aquatic species	Per cent. of all marsh and swamp species.	Per cent. of all aquatic species.	Marsh and swamp per cent of each.	Aquatic per cent. of each.
Gramineae	0	15.7	16.7	30	9.4	33.7	0	0	89	0	0	8.7	0	0	100.	17	2	6.4	3.5	19.1	2.2
Cyperaceae	.8	22.0	16.9	29	9.1	24.5	0	0	118	0	0	11.5	0	0	100.	71	3	2.7	5.2	60.1	2.5
Liliaceae	2.7	22.2	5.5	8	2.5	22.2	0	2	34	0	1.9	3.3	0	5.5	94.5	6	0	2.2	0	16.6	0
Orchidaceae	0	30.0	10.0	9	2.8	30.0	0	0	30	0	0	3.0	0	0	100.	23	0	8.6	0	76.6	0
Polygonaceae	0	9.1	27.2	11	3.4	50.0	0	0	22	0	0	2.1	0	0	100.	9	2	3.4	3.5	40.9	9.0
Ranunculaceae	0	47.6	11.9	23	7.2	54.7	0	0	42	0	0	4.1	0	0	100.	3	4	1.1	7.0	7.1	9.5
Cruciferae	3.3	10.0	20.0	11	3.4	36.6	0	0	30	0	0	3.0	0	0	100.	4	0	1.4	0	13.3	0
Rosaceae	3.6	25.9	11.1	17	5.3	31.4	13	19	22	24.5	18.2	2.1	24.0	35.1	40.7	7	0	2.6	0	12.9	0
Leguminosae	9.0	1.8	7.2	4	1.2	7.2	1	3	51	1.9	2.9	5.0	1.8	5.4	92.8	2	0	.7	0	3.5	0
Umbelliferae	0	0	22.7	6	1.8	27.2	0	0	22	0	0	2.1	0	0	100.	4	0	1.4	0	18.1	0
Labiatae	4.1	20.8	16.6	7	2.2	29.1	0	0	24	0	0	2.3	0	0	100.	6	0	2.2	0	25.0	0
Scrophulariaceae	3.1	15.6	3.1	7	2.2	21.8	0	0	32	0	0	3.1	0	0	100.	7	2	2.6	3.5	25.0	6.2
Compositae	5.7	4.6	8.6	16	5.0	9.2	0	1	172	0	.9	16.9	0	.5	99.5	15	1	5.7	1.7	8.6	.5
Total Dominant	3.0	15.9	12.6	178	56.1	24.3	14	24	689	26.4	23.0	67.0	1.9	3.3	94.8	174	14	65.7	24.5	23.9	1.9

The statistics of the species in dominant families may be compared with the similar statistics for the total range elements. The northernness of the dominant family-element, expressed by the figures 54 8 is somewhat less than the northernness of the total species, expressed by the figures 55 6. On the other hand the southernness of the same element, expressed by the figures 76.6 is slightly in excess of the southernness of the total specific group. The dominant family-element is in like manner characterised by easternness less than is the total element (85.1—87.2) and by westernness more than is the total element (54.0—51.4). These differences are due in great part to the influence of the *Compositae*, *Leguminosae* and *Gramineae*.

In extra-continental range the dominant families fall behind the total specific element, expressed by the figures 24.3—27.0, while in NSEW range they are approximately identical with the total element. In physiognomic characters it may be noted that the dominant families fall behind in arboreal percentage (1.9—4.7) and in shrubby percentage (3.3—8.8), but lead in herbaceous percentage (94.8—86.6). Again in the habitat elements a similar variation is to be discovered, for the dominant families furnish, in comparison with the total element a smaller per centage of aquatics (1.9—4.0), a slightly larger percentage of marsh and swamp species (23.9—22.5) and an approximately equal percentage of drier-soil species. These variations from the general averages for the entire floral element are explicable through the more marked endemic quality of the dominant family species. The highly endemic character of the *Leguminosae* and *Compositae*, contributing more than two hundred species to the dominant family element, is thus reflected in the general result of the dominant family tabulations. It is precisely the two dominant families most distinctly of southern range that thus become emphasised as peculiarly endemic. The connection of this fact with earlier statements regarding the preponderantly northern intra-continental range of extra-continental species will be apparent.

Of the dominant family element, 272 species are monocotyledonous, 226, archichlamydeous and 229, metachlamydeous. Of this element, then, the Monocotyledones furnish 37.4 per cent., the Archichlamydeae 30.8 per cent. and the Metachlamydeae 31.8 per cent. Compared with the total floral element, this shows a falling off in Archichlamydeae (39.1—30.8), a slight reduction in Metachlamydeae (32.3—31.8) and a proportional gain in Monocotyledones (28.4—37.4). The strong development of the genus *Carex* is one of the apparent causes of the variation from the general percentages, but it is interesting to see that it is the "mean" taxonomic group—that of the Archichlamydeae which suffers by reduction, to the greatest degree. While multiplicity of species is often a sign of comparative newness in a genus this multiplication may arise either in older or newer families. The monocotyledonous and metachlamydeous herbs, in their relation to the general and special tensions, have been explained in outline above. A similar explanation must be offered of the reduction of the Archichlamydeae from the dominant family position. At once in the oldest and in the youngest of the three taxonomic groups have been working the causes which tend to multiciplicity of genera in excess of reduction, for these two groups are peculiarly exposed under the law of ejection. Hence they become relatively plastic and specific modifications are frequent. The third group, however, undergoes the series of changes which tend to reduction of species in excess of multiplication, and, with this reduction, the tendency is towards greater solidarity of formations and movement toward the shrubby or arboreal habit. Thus in the percentages of the dominant families further evidence concerning the difference in meaning of Archichlamydeae, Metachlamydeae and Monocotyledones, in the distribution over a limited area, is discovered.

VI. CONCLUSION.

The statistical investigation of the Metaspermae indigenous to the valley of the Minnesota having now been completed as far as the limits of this work may permit, it remains to offer some brief summary and explanation of the more important facts believed to have been determined in the preceding pages. It has been shown that while the valley of the Minnesota is geographically central in the North American continent, it is by no means botanically central, but on the contrary, strongly southern and eastern, This particularly important fact needs explanation. Upon examination it would appear that two sets of factors must be conceived as having interacted to bring about this result. These factors may be grouped as physical (in the narrow sense) and biological. Under the first head it must be observed that while geographically central, the Minnesota valley is not central in point of elevation, climate, prevailing winds, and drainage. The line of mean elevation lies to the west of the valley, the continental climatic mean, so far as concerns temperature, lies to the north of it. The winds of the summer are pretty generally southern in their character, and there is no drainage towards the valley from the far western regions of the continent. Geologically, too, the valley has belonged, since the very early ages, to the Atlantic North American continent. Before the union of the eastern and western halves of the continent, Minnesota and much surrounding territory was formed as a portion of the eastern area. The present topography of the continent is such that a district situated as is that of the Minnesota valley must perforce receive its population of plants from the east and from the south, rather than from the west or north. It, appears, therefore, that the geographically central position of the valley does not by any means counterbalance its geological, topographical, hydrographical southeasternness. This southeasternness is reflected in a preponderantly southeastern metaspermic flora.

From another point of view it will be seen that the equatorial pressure of plant population tends to crowd into the valley species of southern range. This biological phenomenon may be deemed of importance scarcely second to the physical phenomena named above, as a determinant of the southeasternness of the Minnesota valley plant inhabitants. Not only does the equatorial pressure tend to inject southern forms into the valley area, but it tends also to fill the valley with species strong on account of their southernness. As has been seen it is particularly the newest and most vigorous group of plants—the Metachlamydeae—that is characterised by a general northbound movement. Thus, doubly, the biological conditions of plant immigration favor an extensive movement from the south rather than from the north, More plants and stronger plants may be expected from that direction than from any other. The various modifications of this general movement have already been discussed.

The two groups of causes for the southern and eastern character of the Minnesota valley plant-population will, upon analysis, be found adequate to explain the preponderance of species.

In conclusion the following tabulation is presented as a summary of the characters peculiar to each of the three taxonomic groups represented in the valley of the Minnesota. The numerals indicate the order of the importance of each group in the character in question. For example, the Monocotyledones show a larger percentage of aquatic plants than the Archichlamydeae and these a larger percentage than the Metachlamydeae. Therefore the Monocotyledones column contains the figure "1," the Archichlamydeae column, the figure "2" and the Metachlamydeae column, the figure "3," on the line of "aquatic plants." Thus, in the several entries, the position of each taxonomic group is indicated.

42. Summary of Characters of Taxonomic Groups.	Monocotyledones.	Archichlamydeae.	Metachlamydeae.	42. Summary of Characters of Taxonomic Groups.	Monocotyledones.	Archichlamydeae.	Metachlamydeae.
No. of families	3	1	2	N.-S.-W. species	3	2	1
Cosmopolitan families	1	3	2	N.-S.-E.-W. species	1	2	3
Extratropical families	2	1	3	South-east species	3	2	1
Tropical families	2	3	1	South-west species	3	2	1
W. hemisphere families	1	2	3	South-east-west species	2	3	1
N. extratropical families	3	1	2	No extra-continental species	2	1	3
N. American families	3	2	1	Europe	1	2	3
No. of genera	3	1	2	Asia	2	1	3
Cosmopolitan genera	1	3	2	Manchuria-Japan	3	1	2
Extratropical genera	2	1	3	Africa	1	2	3
Tropical genera	1	2	3	Australasia	1	2	3
N. extratropical genera	3	1	2	West Indies	1	3	2
W. hemisphere genera	2	3	1	South America	1	2	3
N. American genera	1	3	2	Northern extracont	1	2	3
Northern genera	1	2	3	Southern extracont	3	2	1
Southern genera	3	1	2	Eastern extracont	1	2	3
Eastern genera	1	2	3	Western extracont	2	3	1
Western genera	2	3	1	Not-N. extracont	3	2	1
No. of species	3	1	2	Not-E. extracont	3	2	1
Northern species	1	2	3	Arboreal species	3	1	2
Southern species	3	2	1	Shrubby species	3	1	2
Eastern species	1	2	3	Herbaceous species	1	3	2
Western species	1	3	2	Aquatic species	1	2	3
North-east species	1	2	3	Marsh and swamp species	1	2	2
North-west species	2	1	2	Drier-soil species	3	2	1
North-east-west species	1	2	3	Dominant family species	1	3	2
North-south-east species	2	1	3				

INDEX

OF THE LIST OF METASPERMAE.

Synonyms are in Roman, accepted generic and specific names in *italics* and accepted family names in **bold face.**

A

Abacosa Alef 315
Abelemis petiolaris Raf 237
Abelmoschus Med 361
Abelia R. Br 483
Abildgaardia Vahl 102
Abola Adans 64
Absinthium Gaertn 550
Acacia brachyloba Willd 308
Acalypha Linn 340
—caroliniana Walt 341
—virginica Linn 341
—virginica var. genuina Mull Arg 341
Acanos Adans 558
Acanthocladus Kl 338
Acarna Vaill 558
Acedilanthus Trautv 145
Acer Linn 351
—*barbatum* Michx 352
—*barbatum* var. *nigrum* (Michx. f) 353
Acer canadense Marsh 354
—carolinianum Walt 352
—coccineum Michx. f 352
—dasycarpum Ehrh 353
—eriocarpum Michx 353
—glaucum Marsh 352
—microphyllum Pax 352
—montanum Ait 353
Acer negundo Linn 351
Acer nigrum Michx. f 353
—parviflorum Ehrh 353
—pennsylvanicum DuRoi 353
Acer pennsylvanicum Linn 354
Acer rubrum Lauth 353
Acer rubrum Linn 352
Acer rubrum var. pallidum Ait 353
Acer saccharinum Linn 353
Acer saccharinum Wang 352
—saccharinum var nigrum T. and G 353
—saccharophorum Koch 352
—saccharum Britt 352
—saccharum Marsh 353
—saccharum var. nigrum Britt 353
—sanguineum Spach 352
—semiorbiculatum Pax 352
Acer spicatum Lam 353
Acer striatum DuRoi 354
Aceraceæ 351
Aceras R. Br 164
Acerates Ell 423
—floridana Hitchcock 424
—lanuginosa Decne 423
—longifolia Ell 424
—monocephala Laph 423
—viridiflora Ell 423
Acetosa Neck 202
Achaeta Fourn 66
Achaetogeron A. Gray 525
Achillea Linn 549
Achillea gracilis DC 549
—lanulosa Nutt 549
Achillea millefolium Linn 549
Achillea millefolium var. nigrescens E. Mey 549
—occidentalis DC 549
—setacea Schwein 549
—tomentosa Pursh 549
Achnatherum Beauv 57
Achroanthes Raf 172
—*unifolia* (Michx.) 173
Achyrocoma Cass 499
Acicarpa Raddi 49
Acilepis Don 499
Acinos Moench 451
—*vulgaris* (Linn.) 451
Aciphylla A. Gray 548
Aciphylla Baill 392
Acispermum Neck 543
Acleia DC 553
Acleisanthes Gray 216
Acmispon sericeum Raf 332
Acnide Linn 213
Acnida cannabina var. concatenata Moq 214
Acnida rusocarpa Moq 214
Acnide tamariscina (Nutt.) 214
Acnida tuberculata Moq 224
Aconitella Spach 234
Aconitum Linn 234
Acorus Linn 130
Acorus aromaticus Gilib 130
Acorus calamus Linn 130
—*calamus* forma *angustifolia* 130
Acorus commutatus Schott 130

Acorus odoratus LAM 130
Acronema EDGEW 394
Actaea LINN 232
—— *alba* (LINN.) 232
Actaea americana var. A. PURSH 232
—— americana var. B. PURSH 232
—— brachypetala var. A. DC. 232
—— brachypetala var. B. DC. 232
—— pachypoda ELL 232
Actaea rubra (AIT.) 232
Actaea spicata var. alba LINN. 232
—— spicata var. rubra AIT. 232
Actinea JUSS 547
Actinella NUTT 547
Actinochloa WILLD 70
Actinocyclus KL 403
Actinospera TURCZ 232
Acuania MED 308
—— *illinoensis* (MICHX.) 308
Adamsia F. and ENDL 299
Adenileima BL 281
Adenocaulon HOOK 530
—— *bicolor* HOOK 541
Adenocyclus LESS 500
Adenolepis LESS 545
Adenolinum REICH 335
Adenonema BUNGE 221
Adenopetalum KL. and G 341
Adenophora FISCH 494
Adenophyllum PERS 548
Adenotrias SPACH 362
Adenotrichia LINDL 554
Adicea RAF 198
—— *pumila* (LINN.) 198
Adike RAF 198
—— pumila RAF 198
Admirabilis CLUS 216
Adopogon NECK 564
—— *virginicum* (LINN.) 564
Adoxa LINN 491
—— *moschetallina* LINN 491
Adoxaceae 490
Adoxeae BAILL 490
Adupla BOSC 90
Aegialea KL 406
Aegialina SCHULTES 77
Aegialitis TRIN 77
Aegilops hystrix NUTT 87
Aegonychon S. F. GRAY 436
Aeschynomene frutescens POIR 318
Aetheolaena CASS 554
Aethiorhiza CASS 567
Agapetes DUN 410
Agarista DC 543
Agassizia ENGELM and GRAY 547
—— SPACH 380
Agastache BAILL 449
Agathophyton MOQ 211
Agathyrsus DON 560
—— leucophaeum BECK 560
Agenium NESS 47
Ageratum altissimum LINN 501
Ageratiopsis SCH.-BIP 501
Agoseris RAF 564
—— *glauca* (PURSH) 564
Agraulus BEAUV 64
Agrimonia LINN 302
—— *eupatoria* LINN 302
Agropyrum J. GAERTN 85
—— *caninum* (LINN.) 85
—— *glaucum* (DESF.) var. *occidentale* VAS. and SCRIBN 86
Agropyrum repens AUCT 86
Agropyrum violaceum (HORN.) 86
Agrosticula RADDI 62
Agrostis LINN 64
Agrostis aspera MICHX 64
—— canina GRAY 65
—— canina var. alpina OAKES 65
—— cinna LAM 64
—— clandestina SPRENG 64
—— cryptandra TORR 62, 63
—— filiformis MUHL 59
—— foliosa R. and S. 59
Agrostis hiemalis (WALT.) 65
Agrostis juncea MICHX 63
—— lateriflora MICHX 69
—— lateriflora, var. filiformis TORR 59
—— laxiflora RICH 65
—— laxifolia HOOK 65
—— longifolia TORR 64
—— mexicana LINN 59
—— michauxii TRIN 65
—— oreophila TRIN 65
Agrostis perennans (WALT.) 65
Agrostis pickeringii TUCK 65
—— racemosa MICHX 60
Agrostis rubra var. *alpina* (OAKES) 65
Agrostis rubra var. americana SCRIB 65
—— rupestris CHAP 65
—— scabra WILLD 65
—— setosa MUHL 60
—— sobolifera MUHL 60
—— tenuiflora WILLD 59
—— virginica MUHL 63
Agylla PHILLIPPI 103
Aiolotheca DC 533
Aira altissima MOENCH 68
—— ambigua MICHX 68
—— breviaristata GILIB 68
—— caespitosa LINN 68
—— cristata LINN 77
—— elodes BRIGN 78
—— mollis MUHL 76
—— obtusata MICHX 76
—— triflora ELL 76
—— truncata MUHL 76
Airidium STEUD 67
Airochloa LINK 77
—— cristata LINK 77
Akentra, Benj 473
Alacospermum NECK 397
Alangieae ENDL 399

Alaternus TOURN 356
Albersia KUNTH 215
Aldea R. and P. 435
Alectoroctonum SCHLECT..... 341
Alepidea Laroche 388
Alipsa HOFFM 173
Alisma LINN 43
Alisma angustifolium HOPPE. 43
——lanceolatum SCHULTZE. 43
——latifolium GILIB 43
——natans POLL 43
——odorata RAF 43
——parviflora PURSH 43
Alisma plantago LINN 43
Alisma plantago var. americanum R. and S 44
——plantago var. triviale B. S. P. 43
——ranunculoides ALL 43
——roseum RAF 43
——subcordatum RAF 43
—— trivialis PURSH 43
Alismaceae 42
Alliaria ADANS 257
Allionia LOEFFL 216
——hirsuta PURSH 217
——linearis PURSH 216
——nyctaginea MICHX 217
Allium LINN 147
Allium acutum SPRENG 148
Allium canadense KALM 147
——*cernuum* ROTH 148
Allium foliosum CLAR 148
——palustre POURR 148
——punctulatum SCHLECHT 148
Allium schoenoprasum LINN ... 148
Allium schoenoprasum var alpinum KOCH 148
——sibiricum R and S 148
——sibiricum schoenoprasioides FR 148
——stellatum HOOK 148
Allium stellatum NUTT 147
Allium tenuifolium POHL 148
Allium tricoccum AIT 148
Allium tricorne POIR 148
Alloteropsis PRESL 49
Alnaster SPACH 189
Alnites 190
Alnobetula SCHUR 189
Alnophyllum 190
Alnus GAERTN 189
Alnus crispa PURSH 190
—glauca MICHX. f. 190
Alnus incana (LINN.) 190
Alnus incana var. glauca GRAY 190
——incana var. vulgaris SPACH 190
——intermedia SCHRAD. .. 190
Alopecurus LINN 61
Alopecurus aristulatus MICHX. 61
—— fulvus KUNTH 61
Alopecurus geniculatus var. *aristulatus* (MICHX.) 61
Alopecurus subaristatus PERS. 61
Alsinaceae 219
Alvardia FENZL 390
Alymnia NECK 531
Alyssum ludovicianum NUTT. 263
Amarantaceae 213
Amaranthus LINN 214
——*blitoides* S. WATS 215
Amarantus tamariscinus NUTT 214
Amaryllidaceae 159
Ambassa STEETZ 499
Ambliolepis DC 547
Amblyogene RAF 214
Ambrina SPACH 211
Ambrosia LINN 534
Ambrosia absinthifolia MICHX 534
Ambrosia artemisiaefolia LINN. 534
Ambrosia coronopifolia T. and G. 534
——elatior LINN 534
——heterophylla MUHL 534
——paniculata MICHX 534
——peruviana DC 534
Ambrosia psilostachya DC 534
—— *trifida* LINN 535
——*trifida* var. *integrifolia* (MUHL.) 535
Amelanchier MED 285
——*alnifolia* NUTT 285
Amelanchier bartramiana ROEM 286
——botryapium BORKH 286
——canadensis ANDERS 285
Amelanchier canadensis (LINN.) 285
Amelanchier canadensis var. alnifolia T and G 285
——canadensis var. botryapium T. and G 286
——canadensis var. oblongifolia BENTH 285
——canadensis var. oblongifolia T. and G.. 286
Amelanchier canadensis var. *obovalis* (MICHX.) 286
Amelanchier canadensis var. prunifolia CASTIGL .. 286
——canadensis var. pumila T and G 285
——diversifolia var. alnifolia TORR 285
——florida LINDL 285
——intermedia SPACH 286
——oblongifolia ROEM 286
——ovalis DC 286
——ovalis HOOK 286
——ovalis var. semiintegrifolia HOOK 285
——pumila 285
——sanguinea LINDL 286
——spicata.. DECN 286
—— wangenheimiana ROEM. 286
Amelanchier PERS 283
Amelia ALEF 403
Amellus ADAMS 515

Amellus (?) spinulosus Pursh 514
—— villosus Pursh 507
Amiantanthium Kunth 144
Amianthium A. Gray 144
Ammodia Nutt 507
Ammogeton Schrad 564
Amonia Nestl 302
Ammophila Host 67
——*longifolia* (Hook.) 67
Amorpha Linn 326
——*canescens* Nutt 326
——*fruticosa* Linn 327
——*microphylla* Pursh 327
Amorpha nana Nutt 327
Ampelideae Endl 357
Ampelopsis Michx 357
——hederacea DC 357
——hirsuta Don 357
——quinquefolia Michx 357
Ampelygonum Lindl 204
Amphigena Janka 82
Amphiraphis DC 508
Amphicarpa Ell 311
Amphicarpaea DC 311
——comosa Ridd 311
——monoica Ell 311
——sarmentosad Nutt 311
Amygdaleae Endl 281
Amygdalopsis Carr 305
Anacamptis L. C. Rich 164
Anacardiaceae 345
Anacharis Bab. et Planch 45
——alsinastrum Bab 47
——canadensis Planch 46
Anacis Schrank 543
Anadelphia Hack 47
Anagzanthe Bando 412
Anaphalis DC 529
——*margaritacea* (Linn.) 529
Anaphrenium E. Mey 345
Anapodophyllum Tourn 250
——peltatum Moench 250
Anantherix Nutt 423
Antherum P. B 47
Ancathia DC 558
Anchusa canescens Muhl 438
——hirta Muhl 438
Andrieuxia DC 536
Androcera Nutt 458
Androcoma Nees 97
Andromeda Linn 406
Andromeda calyculata Linn 407
——glaucophylla Link 406
Andromeda polifolia Linn 406
Andromeda rosmarinifolia Pursh 406
Andropogon Linn 47
Andropogon avenaceus Michx 48
——dissitiflorus Michx 48
——furcatus Muhl 48
——gerardi Vitm 48
Andropogon nutans Linn 48
Andropogon provincialis Lam 48
Andropogon purpurascens Willd 48
Andropogon scoparius Michx 48
Andropogon villosus var. B. Lam 48
Androsace Linn 411
——*occidentalis* Pursh 411
Androsaemum All 362
——Spach 362
Andryala Linn 568
Anecio Neck 553
Anemone Linn 235
Anemone aconitifolia Michx 237
——acuta Vail 236
——acutiloba Laws 236
——americana Nich 235
——borealis Rich 239
——canadensis Linn 237
Anemone caroliniana Walt 239
Anemone commersoniana DC 238
——cuneata Schlecht 239
——cuneifolia Juss 239
Anemone cylindrica Gray 238
Anemone decapetala Auct. Am 239
——dichotoma Auct. Am 237
Anemone dichotoma var. *canadensis* (Linn.) 237
Anemone globosa Nutt 238
——hartiana Raf 239
Anemone hepatica Linn 235
——*hepatica* var. *acuta* (Pursh) 236
Anemone hirsuta Moench 237
Anemone hirsutissima Pursh 239
Anemone hudsoniana Rich 238
——irregularis Lam 237
——lanigera Gay 238
——laxmanni Steud 237
——ludoviciana Nutt 239
——minima DC 236
Anemone multifida Poir 238
Anemone narcissiflora Hook. and Arn 238
——nemorosa Auct. Am 236
——nemorosa var. quinquefolia Gray 236
——nuttalliana DC 239
——nuttallii Nutt 239
Anemone parviflora Michx 239
Anemone patens Hook 239
——patens var. hirsutissima Hitchcock 239
——patens var. nuttalliana Gray 239
——pedata Raf 236
——pennsylvanica Linn 237
Anemone quinquefolia Linn 236
Anemone sanguinea Pursh 238
——tenella Banks 239
——tenella Pursh 239
Anemone thalictroides Linn 235
Anemone thalictroides var. uniflora Pursh 235
——trilobata Pers 239
Anemone virginiana Linn 237

Anemone walteri PURSH...... 235
——wolfgangiana (BESS.)... 240
Anemonella SPACH. 235
– thalictroides SPACH.... 235
Anethum TOURN............. 390
Aneurus E. MEY............. 313
Angelica LINN............... 391
——*atropurpurea* LINN...... 392
Angelica hirsuta MUHL...... 392
——triquinata MICHX....... 392
——triquinata NUTT....... 392
Angelica villosa (WALT.)....... 392
Angelophyllum RUPR........ 391
Anisantha C. KECH.......... 83
Anisanthus WILLD.......... 483
Anisocalyx HANCE.......... 473
Anisodoris CASS.......... .. 567
Anisolotus BERNH.......... 331
Anisometros HASSK.......... 334
Anisophyllum HAW.......... 341
Anisoramphus DC........... 567
Anisotes LINDL............. 374
Anisum E. and Z............ 394
Anomalostemon KL.......... 269
Anonymos WALT............ 503
——caroliniensis WALT..... 438
——caroliniensis WALT...... 311
Anoplanthus ENDL........... 475
——fasciculatus WALT...... 476
Anoplon WALLR............. 475
Anosporum NEES............ 90
Antennaria GAERTN.......... 528
Antennaria margaritacea R. BR.................. 529
——plantaginea DC....... .. 528
Antennaria plantaginifolia (LINN. 528
Antenoron RAF............. 204
——racemosum RAF........ 209
Antephora axilliflora STEUD.. 73
Anthacantha LEM........... 341
Anthocytrum REICH......... 567
Anthomeles ROEM........... 278
Anthomeles rotundifolia ROEM... 288
Anthophyllum STEUD........ 97
Anthosachne STEUD.......... 85
Anticlea KUNTH.............. 144
Antidesmeae ENDL. 340
Antiphylla HAW............. 274
Antirrhineae DC............ 59
Anychia RICH................. 225
——*dichotoma* (MOENCH).... 225
Apalanthe PLANCH.......... 45
——schweinitzii PLANCH... 46
Aparine LINN 479
Apatanthus VIV............. 568
Apenula NECK.............. 496
Aphaca TOURN.............. 313
Aphanostemma ST. HIL...... 241
Aphyllon MITCH............ 475
——*fasciculatum* (NUTT). .. 476
——*ludovicianum* (NUTT.)... 475
——*uniflorum* (LINN.)....... 476
Apiaceae LINDL 387
Apios MOENCH............... 315
——*apios* (LINN).......... 315
Apios tuberosa MOENCH...... 315
Apirophorum NECK.......... 283
Aplectrum NUTT............. 176
Aplectrum hiemale (NUTT.).. 176
Aplectrum spicatum (WALT.)... 176
Aplopappus, *see* Haplopappus.
——baccharioides BENTH... 508
Aplostellis THOU............ 169
Aplostemon RAF............ 96
Apocynaceae 421
Apocynophyllum............ .. 421
Apocynum LINN............... 421
Apocynum androsaemifolium A.DC................ 422
Apocynum androsaemifolium LINN. 422
Apocynum androsaemifolium var. incanum A.DC... 422
Apocynum cannabinum LINN.. 421
Apocynum hypericifolium AIT. 421
——pubescens R. BR........ 421
——sibiricum JACQ......... 421
Apodynomene E. MEY........ 327
Apogetoneae (*Tribus*)......... 33
Aquartia LINN.............. 458
Aquifoliaceae..... 349
Aquilarineae ENDL.......... 372
Aquilegia LINN............... 233
——*canadensis* LINN.. 233
Aquilegia elegans SALISB..... 233
——variegata MOENCH..... 233
Arabidium SPACH............ 265
Arabidopsis SCHUR........... 257
Arabis LINN.. 265
Arabis bulbosa SCHREB....... 262
Arabis canadensis LINN 266
——*confinis* S WATS........ 266
——*dentata* TORR........... 265
Arabis drummondii GRAY.... 266
——falcata MICHX......... 266
Arabis glabra (LINN.) 266
Arabis heterophylla NUTT.... 267
Arabis hirsuta (LINN)......... 267
——*laevigata* (MUHL.)....... 267
Arabis lyraefolia DC.......... 266
Arabis lyrata LINN............ 265
Arabis mollis RAF............ 266
Arabis patens SULLIV......... 267
Arabis pendula NUTT......... 267
——perfoliata LAM......... 266
——reptans LAM.. 264
——rhomboidea PERS....... 262
——rotundifolia RAF....... 264
Araceae ENGL....... 130
Aracium MONN...... 567
Aralia LINN................. 385
——*hispida* VENT........... 386
Aralia muhlenbergiana R. and S 386
Aralia nudicaulis LINN 386
——*quinquefolia* (LINN.)..... 386

Aralia racemosa Linn 387
——*trifolia* (Linn.) 385
Araliaceae 385
Araliophyllum 385
Arbutus filiformis Lam. 407
——thymifolia Ait. 407
——uva-ursi Linn 408
Archangelica Hoffm. 391
——atropurpurea Hoffm. ... 392
——hirsuta T. and G. 392
Archemora DC. 391
——rigida DC. 391
ARCHICHLAMYDEAE 176
Arctogeron DC. 515
Arctostaphylos Adans 408
Arctostaphylos officinalis Wim. 408
Arctostaphylos uva-ursi (Linn.) 408
Aremonia Neck 302
Arenaria buxifolia Poir 224
——lateriflora Linn 224
——pennsylvanica Muhl. .. 224
Arethusa Linn 169
Arethusa bulbosa Linn 169
——ophioglossoides Linn ... 169
——spicata Walt. 176
Aretia Linn 411
——occidentalis MacM. ... 411
Argyrochaeta Cav 538
Aria Host 283
Arietinum Beck 162
——americanum Beck 164
Arisaema Mart 132
Arisaema atrorubens Blume .. 132
Arisaema triphyllum (Linn.) .. 132
Aristella Bertol 57
Aristida Linn 56
Aristida basiramea Engelm ... 56
——*purpurea* Nutt 56
Aristidium Endl 70
Aristolochia Linn 201
Aristolochia macrophylla Lam. 202
Aristolochia sipho L'Her 202
Aristolochiaceae 201
Aristolochiaephyllum 202
Aristotelea Lour. 170
Armeniaca Juss 305
Armeria Linn 431
Aroideae 130
Aronia Pers 283, 285
——alnifolia Nutt 285
——arborea Bart 286
——arbutifolia Ell. 284
——botryapium Pers 286
——cordata Raf 286
——depressa Spach 284
——ovalis Torr 286
——pyrifolia Pers 284
Artemisia Linn 550
——*biennis* Willd 550
Artemisia campestris Pursh. 552
Artemisia canadensis Michx ... 552
——*caudata* Michx 552
Artemisia cernua Nutt 552
Artemisia commutata Bess 552
——desertorum Bess 552
——douglasiana Bess 561
Artemisia dracunculoides Pursh 552
Artemisia dracunculus Pursh 552
Artemisia frigida Willd 550
Artemisia frigida var. gmeliana Bess 550
Artemisia gnaplalodes (Nutt.). 551
Artemisia hispanica Jacq 550
——hookeriana Bess 551
——inodora Hook and Arn. 552
——integrifolia Muhl 535
——integrifolia Pursh 551
——lewisii T. and G. 552
Artemisia longifolia Nutt 551
Artemisia ludoviciana Nutt. 551
——ludoviciana var. serrata T. and G 551
——nuttalliana Bess 552
——pacifica Nutt 552
——peucedanifolia Juss 552
——purshiana Bess 551
——sericea Nutt 550
Artemisia serrata Nutt 551
Artemisia virgata Rich 550
——vulgaris var. gnaphalodes OK 551
——vulgaris var. ludoviciana OK 551
Arthratherum Beauv 56
Arthrostachys Desvx 47
Arthrothamus Kl. and G. 341
Arum triphyllum Linn 132
Arundo Beauv 73
——aggerum Kit 73
——agrostoides Pursh 66
——canadenesis Michx 66
——cinnoides Muhl 66
——colorata Willd 55
——festucacea Willd 79
——graeca Link 76
——neglecta Ehrh 66
——phragmites Linn 73
——stricta Timm 66
——vulgaris Lam 73
——vulnerans Gilib 73
Asagraya Lindl 144
Asarum Linn 201
——*canadense* Linn 201
Asarum caroliniaum Walt ... 201
——latifolium Salisb 201
——villosum Muhl 201
Ascaricida Cass 499
Asclepiadaceae 422
Asclepias Linn 423
Asclepias amoena Brongn ... 426
——amoena Linn 427
——cornuti Decne 426
——douglasii Hook 426
Asclepias exaltata (Linn.) 425
——*floridana* Lam 424
Asclepias galioides HBK. 424
Asclepias incarnata Linn 426

Asclepias lanuginosa Nutt.... 423
Asclepias longifolia Michx... 424
——nuttalliana Gray....... 424
——nuttalliana Torr...... 423
Asclepias obtusifolia Michx.... 425
——*ovalifolia* Decne........ 424
Asclepias phytolaccoides Pursh................ 425
Asclepias purpurascens Linn... 427
Asclepias purpurascens Walt. 425
——pulchra Willd......... 426
Asclepias quadrifolia Linn..... 424
——*speciosa* Torr........... 426
——*sullivantii* Engelm...... 425
——*syriaca* Linn............ 425
Asclepias syriaca var. exaltata Linn.................... 425
Asclepias tuberosa Linn........ 427
Asclepias vanilla Raf........ 424
——variegata var. a. Hook.. 424
Asclepias verticillata Linn..... 424
——*viridiflora* Raf.......... 423
Asclepias viridiflora var. lanceolata (Ives)......... 424
——viridiflora var. linearis (Gray)................ 424
Asclepiodora A. Gray......... 423
Ascyrum crux-andraea Linn.. 363
Aspelina Cass.......... 553
Asperifoliae Lehm............ 436
Aspidoglossum E. Mey....... 423
Asprella Schreb............ 53
——oryzoides Lam.......... 54
——virginica R. and S...... 54
Asprella Willd............... 89
——angustifolia Nutt...... 89
——hystrix Willd.......... 89
Aster Baill.................. 515
Aster Kuntz............... 508
Aster Linn.................. 515
Aster aestivus Ait........... 517
——aestivus Gray......... 518
——albus Eat. and Wr..... 516
——amoenus Lam........... 517
——amplexicaulis Lam...... 523
——amplexicaulis Michx... 523
——amplexicaulis Muhl.... 521
——amygdalinus Lam...... 516
——annuus Linn........... 527
——argenteus Michx....... 523
Aster asteroides (Linn.)........ 521
Aster bellidiflorus Hook...... 518
——biennis Torr.......... 523
——borealis Provanch..... 518
——carneus Nees.......... 518
——carneus Nees.......... 519
——ciliatus Muhl......... 520
——concinnus Hook...... . 521
——conyzoides Willd....... 524
Aster cordifolius Linn......... 522
Aster cordifolius Nees........ 522
——corymbosus Ait......... 524
——cyaneus Hoffm......... 521
——diffusus Ait.......... 519
Aster diffusus DC............. 520
——divergens Hook.... 519
Aster divaricatus Linn. 524
Aster diversifolius DC........ 522
——dracunculoides Willd.. 519
Aster drummondii Lindl...... 521
——*dumosus* Linn........... 520
Aster eminens Willd.. 518
——ericoides var. multiflorus Pers.................. 520
Aster ericoides var. *villosus* (Michx)............... 520
Aster fragilis Lindl.......... 520
——fragilis Nees........... 520
——floribundus Willd...... 519
——floribundus Willd. *Herb*... 517
——glaucescens Nees....... 521
——glomerellus T. and G.... 519
——greenei T. and G........ 518
——hebecladus DC.......... 520
——heterophyllus Nees..... 522
——heterophyllus Willd... 522
——hiemalis Nees.. 518
——hirtellus Lindl......... 521
——hispidus Lam........... 517
——impolitus Nees......... 521
Aster junceus Ait 518
——*laevis* Linn........... 421
Aster lamarckianus Nees.... 519
Aster lateriflorus (Linn.)....... 519
Aster laxifolius Hook........ 518
——laxifolius var. borealis T. aud G.............. 518
——laxifolius var. laetiflorus T. and G. 518
——laxus T. and G.......... 517
——laxus Willd............ 519
——longifolius Gray....... 517
——longifolius var. villicaulis Gray.............. 518
Aster longifolius Lam......... 517
Aster lucidus Wend.......... 517
Aster macrophyllus Linn...... 524
Aster marilandicus Michx.... 524
——miser Nutt............ 519
——multiceps Lindl........ 523
Aster multiflorus Ait.......... 520
Aster multiflorus Nutt...... 520
Aster novae-angliae Linn...... 523
——*novabelgii* Linn......... 517
Aster obliquus Nees......... 518
Aster oblongifolius Nutt....... 523
Aster oolentangiensis Ridd... 522
——paniculatis Lam. *Herb*.. 517
Aster paniculatus Lam......... 519
Aster paniculatus Muhl...... 521
——paniculatus Nees...... 522
——paniculatus Nutt...... 522
——paniculatus Willd..... 522
——parviflorus Darl...... 519
——parviflorus Hook....... 519
Aster patens Ait..... 523
Aster patentissimus Lindl... 523

Aster pendulus HOOK 519
——pennsylvanicus POIR 521
——pilosus WILLD 520
Aster polyphyllus WILLD 521
Aster praealtus POIR 518
Aster ptarmicoides (NEES) 516
——*puniceus* LINN 517
Aster puniceus var. lucidulus GRAY 517
Aster puniceus var. lucidus (WEND.) 517
Aster puniceus var. vimineus T. and G. 517
——recurvatus WILLD 519
——rigidulus DESF 518
——rubricaulis LAM 521
——sagittaefolius ELL 522
Aster sagittaefolius WILLD 521
——*salicifolius* LAM 518
Aster salicifolius RICH 518
——salicifolius SCHOLL 519
——salicifolius WILLD 517
——salignus WILLD 519
——scoparius DC 520
——secundiflorus 520
Aster sericeus VENT 523
Aster serotinus MILL 517
——simplex WILLD 519
——sparsiflorus MICHX 520
——spurius WILLD 523
——squarrulosus NEES 518
——stenophyllus LINDL 518
——strictus POIR 519
——strictus var. angustifolius HOOK 521
——tenuifolius ELL 520
——tenuifolius NEES 521
——tenuifolius T and G 519
——tradescanti LINN 519
——tradescanti MICHX 519
Aster umbellatus MILL 516
Aster undulatus EDL 523
Aster undulatus LINN 522
Aster urophyllus LINDL 521
——villosus MICHX 520
Aster vimineus LAM 519
Aster virgineus NEES 518
Asteraceae 499
Asteranthemum KUNTH 152
—vulgare KUNTH 153
Asterias BORKH 418
Asteromoea BL 515
Asteroschoenus NEES 104
Astetilia CASS 506
Astradelphus REMY 525
Astragalus LINN 323
——*adsurgens* PALL 324
Astragalus agrestis DOUGL 324
Astragalus canadensis LINN 325
——*carnosus* PURSH 326
Astragalus carolinianus LINN. 325
Astragalus caryocarpus KER 326
Astragalus crassicarpus NUTT. 326
Astragalus flexuosus DOUGL., 322, 324
Astragalus goniatus NUTT 325
——gracilis NUTT. 325
Astragalus hypoglottis LINN 324
Astragalus lamberti POIR 323
——laxmanni NUTT 324
Astragalus lotiflorus HOOK 323
Astragalus mexicanus GRAY 325
——pachycarpus T. and G. 326
Astragalus parviflorus (PURSH). 325
——*plattensis* NUTT 325
Astragalus plattensis var. tennesseensis GRAY 325
——striatus NUTT 324
——succulentus RICH 326
——tennesseensis GRAY 325
Astrophia NUTT 313
Atalanta NUTT 269
Ate LINDL 165
Atheropogon MUHL 70
——apludioides LAG 71
——oligostachyum NUTT 72
——papillosus ENGELM 71
Athyamus NECK 341
Atomostylis STEUD 90
Atossa ALEF 315
Atragene LINN 210
Aucuparia MED 283
Audibertia BENTH 454
Aulaxis HAW. 274
Aulosema WALP 323
Aurantiaceae ENDL 336
Aurelia CASS 506
——amplexicaulis CASS 506
Aureliana LAFIT 385
Avena LINN 68
Avena caespitosa GRIS 68
——glumacea MICHX 69
——hartmanniana NYM 68
——spicata LINN 69
——stolonifera HAUSM 68
Avena striata MICHX 68
Avena wibeliana SCHUR 68
Avenella PARLAT 67
Axillaria RAF 154
Azarolus BORKH 283

B

Baccharioides MOENCH 499
Bactyrilobium WILLD 309
Badaroa BERT 493
Badiera DC. 338
Baiothryon EHRH 97
Balboa LIEBM 328
Baldellia PARLAT 43
Baldingera GAERTN 54
——arundinacea DUM 55
——colorata GAERTN 55
Balsamina GAERTN 354
Balsamineae 354
Balsamineae (*Trib.*) B. and H. 333

Baptisia Vent. 310
Baptisia alba Hook. 310
Baptisia leucantha T. and G. ... 310
——*leucophaea* Nutt. 310
——*tinctoria* (Linn.) 311
Barbarea R. Br. 258
——*barbarea* (Linn.) var. *stricta* (Andrz.) 259
Barbarea praecox Rich. 259
——stricta Andrz. 259
——vulgaris var. stricta Regel 259
Barkhausenia Hoppe 567
Barkhausia Moench 567
Barlaea Reich. f. 165
Barlia Parlat. 164
Barneoudia Gay 235
Bartsia acuminata Pursh 470
——coccinea Linn. 471
Barysoma Bunge 389
Batodendron Nutt. 409
Batrachium Spach 241
Batschia Gmel. 437
——canescens Michx. 438
——carolinensis Gmel. 438
——caroliniana R and S. 438
——decumbens Nutt. 437
——gmelini Michx. 438
——longiflora Pursh 438
Batschia Moench 501
Baumannia Spach 380
——douglasiana Spach 381
——nuttalliana Spach 381
Baumea Gaudich. 103
B alia Scribn. 58
Beckmannia Host 72
——*erucaeformis* (Linn.) 72
Beckmannia erucaeformis var. uniflora Scribn. 72
——erucoides Beauv. 72
Bedfordia DC. 554
Belharnosia Sarrac. 252
Belioukandas Celt. 384
Bellidiastrum Michel 515
Belloa Remy 529
Bellucia Adans. 338
Bennettiaceae Endl. 340
Benthamia A. Rich. 165
Benthamia Lindl. 399
Benthamidia Spach 399
Berberidaceae 250
Berenice Salish. 147
Bergenia Moench 274
——Neck. 374
Berinea Brign. 568
Berlandiera Baill. 531
Bermudiana Adans. 161
Bernardina Bando 412
Berula Koch 396
——angustifolia Koch 396
Bethencourtia Chois. 553
Betonica Linn. 445
Betula Linn. 188
Betula angulata Lodd 189
Betula canadensis Loud. 189
——grandis Schrad. 189
——grayi Regel 188
——incana Linn. 190
——lanulosa Michx. 189
——latifolia Tausch 189
Betula nigra Linn. 189
Betula papyracea Ait. 189
Betula papylifera Marsh. 189
——*pumila* Linn. 188
Betula rubra Michx. f. 189
Betulaceae 196
Betulaster Spach 188
Bicchia Parlat. 165
Bidens Bill. 544
Bidens Linn. 545
——*beckii* Torr. 545
——*cernua* Linn. 546
Bidens cernua var. elata T and G. 546
——chrysanthemoides Michx. 545
Bidens connata Muhl. 546
Bidens connata var. comosa Gray 546
Bidens frondosa Linn. 545
Bidens helianthoides HBK. 545
Bidens laevis (Linn.) 545
Bidens petiolata Nutt. 546
——quadriaristata DC. 545
——quadriaristata var. dentata Nutt. 546
——tripartita Bigel. 546
Bifolium Gaertn. 152
Bikukulla Adans. 253
Bilabrella Lindl. 165
Bilderdykia Dum. 204
Billardiera Moench 442
Billotia Sch.-Bip. 567
Biophytum DC. 334
Biotia DC. 515
——corymbosa DC. 524
——glomerata DC. 524
——latifolia DC. 524
——macrophylla DC. 524
——schroeberi DC. 524
Bipontinia Alef. 330
Blackburnia Forst. 337
Blennoderma Spach 381
Blepharochloa Endl. 53
Blepharolepis Nees 96
Blitum Linn. 211
——capitatum Linn. 212
——maritimum Nutt. 211
——polymorphum C. A. Mey. 211
——rubrum Reich. 211
——virgatum var. capitatum Coss. 212
Blondea Neck. 275
Bluffia Nees 49
Blumenbachia Koel. 47
Blysmus Panz. 97
Blyttia Fries 64
——suaveolens Fries 64

Bobartia Linn.... 90
——Petiv.... 537
Boebera Less.... 548
——Willd.... 548
——chrysanthemoides Willd.... 549
Boebera glandulosa Pers.... 549
Boehmeria Jacq.... 198
——cylindrica Willd.... 198
——cylindrica var. B. Hook.... 198
——lateriflora Muhl.... 198
Boisduvalia Spach.... 380
Bolophyta Nutt.... 533
Boltonia L'Her.... 515
——*asteroides* (Linn.).... 515
——glastifolia L'Her.... 515
Bombycodendron Zoll.... 361
Bonafidia Neck.... 326
Bongardia C. A. Mey.... 250
Bonnaya Link and Ott.... 464
Bootia Bigel.... 293
——sylvestris Bigel.... 298
Boraginaceés Baill.... 434
Boraginites.... 436
Borderea Mieg.... 160
Borkhausia Link.... 567
Borobora Steud.... 91
Borraginaceae.... 436
Botrophis Raf.... 232
Botrydium Spach.... 211
Botryocarpium Rich.... 278
Botryosychios Hochst.... 160
Bouteloua Lagasc.... 70
——*curtipendula* (Michx.).... 71
Bouteloua foena Torr.... 71
Bouteloua hirsuta Lag.... 71
——*oligostachya* (Nutt.).... 72
Bouteloua racemosa Lag.... 71
Bracconotia elymoides Godr.... 85
Brachyactis Led.... 525
Brachyderea Cass.... 567
Brachyelytrum Beauv.... 61
Brachyelytrum aristatum Beauv.... 61
Brachyelytrum aristosum (Michx.).... 61
Brachyglottis Forst.... 554
Brachyleima R. Br.... 499
Brachylobus Schur.... 259
——hispidus Desv.... 259
Brachypappus Sch.-Bip.... 554
Brachyramphus DC.... 560
Brachyrrhyncos Less.... 554
Brachystemma Don.... 221
Brachystemum Michx.... 452
——lanceolatum Willd.... 452
Brachytropis DC.... 338
Bramia Lam.... 473
Brasenia Schrad.... 226
Brasenia hydropeltis Muhl.... 226
——nymphoides Baill.... 226
Brasenia peltata (Thunb.).... 226
Brasenia purpurea Casp.... 226
Brassavola Adans.... 547
Brathrys Mut.... 362
——quinquenervia Spach.... 363
Brathydium Spach.... 362
Brauneria Neck.... 536
Braya S. and H.... 268
Breea Less.... 558
Brexiaceae Lindl.... 274
Briseis Salisb.... 147
Brissonia Neck.... 327
Briza canadensis Michx.... 82
——canadensis Nutt.... 81
——eragrostis Linn.... 75
——oblonga Moench.... 75
Bromidium Nees.... 64
Bromus Linn.... 83
Bromus canadensis Michx.... 84
——ciliatus Linn. in herb.... 85
Bromus ciliatus Linn.... 84
Bromus ciliatus var. purgans Gray.... 84
——inermis var. ciliata Trautv.... 84
Bromus kalmii Gray.... 85
Bromus ovinus Scop.... 83
——pubescens var. 1 Torr.... 84
——purgans Hook.... 84
Bromus purgans Linn.... 84
Bromus purgans Torr.... 85
Bruchmannia Nutt.... 72
——erucaeformis Nutt.... 72
Bruguiera Cav.... 216
Brunella Linn.... 446
——*vulgaris* Linn.... 446
Bruniera Franch.... 134
Brunonieae Baill.... 494
Bubon Koch.... 390
Buchavea Reich.... 299
Buchingera Schultze.... 429
Buchloë Engelm.... 73
——dactyloides Engelm.... 73
Buchosia Velloz.... 138
Buhsia Bunge.... 269
Bulbilis Raf.... 73
——*dactyloides* (Nutt.).... 73
Bulbocapnos Bernh.... 254
Bulbostyles Walp.... 501
Bulbostylis Raf.... 99
Bumalda Thunb.... 350
Bunium Koch.... 394
Butomeae.... 42
Butomissa Salisb.... 147
Byronia Endl.... 350

C

Cacalia Linn.... 553
——atriplicifolia Linn.... 555
——aurea MacM.... 556
——aurea var. obovata MacM.... 557
——aurea var. paupercula MacM.... 558
——gigantea Nees.... 555
——integerrima MacM.... 556
——lugens MacM.... 555

Cacalia ovata Walt.......... 535
——paniculata Raf......... 555
——pteryantha Raf........ 555
——reniformis Muhl....... 555
——tuberosa Nutt.......... 555
Cacalianthemum Dill....... 554
Caconapaea Cham........... 473
Cactaceae................. 371
Cactus Linn................. 371
——ferox Nutt............ 371
——fragilis Nutt.......... 371
——opuntia Torr.......... 372
Caesalpinoideae........... 308
Calamagrostis arundo Roth.. 68
——canadensis Beauv...... 66
——colorata DC........... 55
——leersii Koel........... 68
——mexicana Nutt......... 66
——neglecta Gaertn....... 66
——stricta Nutt.......... 66
——variegata With......... 55
Calamintha Moench......... 451
——clinopodium Spenn.... 451
Calamovilofa Hack.......... 67
Calamus aromaticus Guld.... 130
Calanthera Nutt............ 73
——dactyloides Kunth (?).. 73
Caldesia Parlat............ 43
Calla Linn.................. 131
Calla aethiopica Gaertn..... 132
Calla palustris Linn......... 132
Callimeris Nees............. 515
Calliopea Don............... 567
Calliopsis Reich............. 543
——bicolor Reich.......... 544
——palmata Spreng....... 544
Calliprena Salisb........... 147
Callirrhoe Nutt............. 360
——involucrata Gray...... 361
Callirrhoe triangulata Gray... 360
Callisace Fisch.............. 391
Callistachys Heuffl......... 105
Callitrichaceae Engl. and Prantl............. 344
Callitriche Linn............. 345
——asagrayi Heg.......... 345
——bolanderi Heg.......... 345
——heterophylla Pursh.... 345
——stenocarpa Heg........ 345
——verna Linn............ 345
——vernalis Koch.......... 345
Callitrichinae Endl......... 344
Calobotrya Spach........... 278
Calonnea Buchoz............ 547
Calopogon R. Br............. 175
——pulchellum R. Br....... 175
——tuberosus BSP.......... 175
Calostelma' Don............. 504
Caltha Linn................. 230
Caltha arctica R. Br......... 230
Caltha palustris Linn......... 230
Calycodone Nutt............. 58
Calylophus Spach........... 380
——nuttallii Spach........ 381
Calymenia Pers.............. 216
——angustifolia Nutt...... 216
——hirsuta Nutt........... 217
Calyptrolepis Steud.......... 104
Calyptrospatha Kl........... 341
Calyptrostigma T. and M...... 486
Calyptrostylis Nees.......... 104
Calysphyrum Bunge.......... 486
Calystegia R. Br............ 428
——sepium R. Br........... 428
——spithameus Pursh...... 428
——tomentosa Pursh....... 428
Calytriplex R. and P.......... 473
Calyxhymenia Orteg......... 216
——pilosa Engelm. and Gray................ 216
Camarilla Salisb............. 147
Camassia Lindl.............. 151
——*fraseri* (Nutt.).......... 151
Camelina barbaraefolia DC... 260
Campanula Baill............. 496
Campanula Linn.............. 494
Campanula acuminata Michx. 495
Campanula americana Linn... 495
Campanula amplexicaulis Michx............... 496
Campanula aparinoides Pursh. 495
Campanula declinata Moench 495
——erinoides Muhl......... 495
——illinoensis Fres........ 495
——obliqua Jacq........... 495
——petiolata A. DC......... 495
——perfoliata Linn......... 496
Campanula rotundifolia Linn.. 495
Campanulaceae............ 494
Campella Gris............... 68
Campella Link............... 67
——caespitosa Link........ 68
Campuloclinium DC.......... 501
Campydorum Salisb.......... 154
Campylocera Nutt........... 496
Campylopus Spach........... 362
Campylosporus Spach........ 362
Campylotheca Cass.......... 543
Campylotropis Bunge........ 317
Canahia Spreng............. 423
Candidia Ten............... 499
Canida Salisb.............. 147
Cannabis lupulus Scop....... 196
Capnodes Moehr............ 254
Capnodes glauca Moench 255
Capnorchis Ludw............ 253
——*canadensis* (Goldie)..... 253
——*cucullaria* (Linn.)....... 253
Capparidaceae............. 269
Capraria gratioloides Linn... 464
Caprifoliaceae............ 482
Caprifolium Tourn.......... 485
——bracteosum Michx..... 485
——ciliatum OK........... 486
——dioicum R. and S....... 485
——glaucum Moench....... 485
——parviflorum Pursh..... 485
Caramanaca Tineo.......... 562

Cardamine LINN.............. 261
——*bulbosa* (SCHREB.)........ 262
—— *diphylla* (MICHX.). ... 262
Cardamine flexuosa BRITT.... 261
Cardamine hirsuta LINN.. 261
Cardamine hirsuta var. sylvatica GRAY.......... 261
Cardamine laciniata (MUHL.).. 262
Cardamine menziesii DC...... 258
——(?) multifida PURSH..... 258
Cardamine parviflora LINN.... 261
Cardamine pennsylvanica MUHL................. 261
——rhomboidea DC.......... 262
——sylvatica LINK......... 261
Cardaria DESVX.............. 256
Cardarina CASS............... 554
Cardiolepis RAF.............. 356
Cardiolophus GRIFF.......... 473
Carduus BAILL............... 558
——altissimus LINN........ 559
——discolor HOOK.......... 559
——discolor NUTT.......... 559
——douglasii DC............ 559
——glaber (?) NUTT......... 558
——hookerianum HOOK..... 559
——muticus NUTT.......... 558
——odoratus MUHL......... 558
——pumilus NUTT 558
——pumilus var. hystrix NUTT 558
——undulatus NUTT........ 559
Carex LINN.................. 105
Carex acuta ALL............. 124
——acuta PURSH 123
——adusta AUCT. VET...... 107
Carex adusta BOOTT........... 107
Carex adusta var. argyrantha BAIL................ 107
——adusta var. glomerata BAIL 107
——alba DEW.............. 118
——alba var. setifolia DEW. 118
——albicans WILLD.... 117
——albolutescens var. argyrantha OLN........... 107
——albolutescens var. glomerata OLN............ 107
——alopecurus LAB......... 95
——alpestris DEW.......... 117
——ampullacea var. utriculata CAR.............. 128
——anceps S. and T......... 119
——anceps var. blanda HOOK 119
——anceps var. striatula CAR.................. 119
——angustata BOOTT....... 123
Carex aquatilis WAHL.......... 123
——*arctata* BOOTT........... 121
Carex argyrantha TUCKM..... 107
——arida S. and T.......... 109
——aristata DEW........... 120
——aristata var. longo-lanceata DEW.......... 124
Carex aristata R. BR.......... 124
——atherodes SPRENG...... 124
Carex aurea NUTT............. 118
Carex aurea var. androgyna OLN................... 118
——bebbii OLN............. 109
——beyrichiana BOECKL.... 127
——blanda DEW............ 119
——blepharophora GRAY.... 121
——blyttii NYL............ 112
——bracteosa SCHW......... 113
——brizoides HUDS......... 110
——bullata AUCT. AMER.... 128
——buxbaumii WAHL....... 123
——canadensis DEW........ 129
——canescens HOOK........ 123
Carex canescens LINN.......... 110
——*castanea* WAHL.......... 121
Carex cephaloides SARTW 113
Carex cephalophora MUHL...... 111
Carex chalaros STEUD........ 120
Carex chordorhiza EHRH....... 116
Carex chordorhiza var. genuina TRAUTV.......... 116
——cinerea PALL........... 110
——comosa BOOTT.......... 126
——concinna OLN........... 118
Carex conjuncta BOOTT 115
Carex conoidea MUHL......... 119
——cooleyi DEW............ 127
——crassa EHRH 124
Carex crawei DEW............. 119
Carex crawei var. heterostachya DEW......... 119
Carex crinita LAM............. 122
Carex crinita var. gynandra S. and T............ 122
——crinita var. minor BOOTT 122
——crinita var. paleacea DEW................. 122
——cristata SCHWEIN 109
——cristata var. mirabilis BOOTT 107
——cristata UPH........... 109
Carex crus-corvi SHUTTLW..... 115
Carex crus-corvi SOMM........ 115
——curta GOOD............ 110
——cylindrica GRAY........ 128
——cyperoides DEW........ 106
——davisii DEW........... 117
Carex davisii S. and T. 120
Carex deinbolliana GAY....... 115
——demissa HORN.......... 119
Carex deweyana SCHWEIN. 110
Carex diandra SCHKR......... 114
——digitata S. and T. 120
——disperma DEW.......... 112
——disticha SARTW......... 113
——disticha var. sartwellii DEW.................. 113
——duriuscula C. A. MEY... 115
Carex eburnea BOOTT.......... 118
Carex echinata UPH.......... 111

Carex echinata var. microcarpa Uph. 111
——echinata var. angustata Bail. 111
——echinata var. microcarpa Bail. 111
——echinata var. microstachys Boeckl. 111
Carex echinata var. *radiata* (Wahl.) 111
Carex elegans Willd. 121
——elongata Leers 110
——emmonsii Chap. 117
——emmonsii var. elliptica Boott 117
——exaltata Petrm. 124
——festucacea Willd. 106
——festucacea var. tenera Car. 106
Carex filiformis Linn. 125
——*filiformis* var. *lanuginosa* (Michx.) 125
——filiformis var. latifolia Boeckl. 125
——flava var. graminis Bail 119
Carex flava var. *viridula* (Michx.) 119
Carex flexilis Rudge 121
——foenea Boott 107
Carex foenea Willd. 107
Carex folliculata Lam 129
——folliculata Wahl. 129
——fulvicoma Dew. 116
——funiformis Clairv. 116
——furcata Ell. 136
Carex fusca All. 123
Carex georgiana Dew. 127
——gigantea Kunth 127
——gigantea Rudge 129
——gracilis Gray 112
Carex gracillima Schwein. 120
——*granularis* Muhl. 120
——*gravida* Bail. 113
——*gravida* var. *laxifolia* Bail. 114
——*grisea* Wahl. 120
Carex grisea var. minor Oln. 120
——glomerata Host 115
——gynandra Schwein. 122
——haleana Oln. 120
——halei Dew. 115
——heterostachya Torr. 119
——hostii Schkr. 115
Carex houghtonii Torr. 125
——*hystricina* Muhl. 127
Carex ignota Dew. 119
——intermedia Dew. 113
Carex intumescens Rudge 129
Carex irregularis Schwein. 119
——irrigua Sm. 122
——irrigua T. C. C. 121
——juncifolia Host 115
——lacustris Willd. 124
——lagopodioides Schkr. 108
Carex lagopodioides var. composita Oln. 108
——lagopodioides var. cristata Car. 109
——lagopodioides var. mirabilis Oln. 107
——lagopodioides var. scoparia Boeckl. 108
——laxa Dew. 121
Carex laxiflora Lam. 119
Carex laxiflora var. striatula Car. 119
——laxiflora Schkuhr 120
——lanuginosa Michx. 125
——lasiocarpa Gaud. 125
——lenticularis Dew. 122
——leporina Michx. 108
——leuchoglochin Linn. f. 130
——liddoni Car. 109
Carex limosa Linn. 121
Carex limosa var. irrigua Wahl. 122
——limosa var. prairei Dew. 121
Carex longirostris Torr. 121
Carex longirostris var. microcystis Boeckl. 121
——longirostris var. minor Boott. 121
——lucorum Willd. 117
——lucorum var. emmonsii Chap. 117
——lupulina Muhl. 129
——*lupulina* var. *longipedunculata* Sartw. 129
Carex lupulina var. pedunculata Dew. 129
——lupulina Uph. 129
——lurida Bail. 129
——lurida var. polystachya Bail. 129
——lurida Mac. 129
Carex lurida Wahl. 127
——*magellanica* Lam. 122
Carex marginata Muhl. 117
——meadii Dew. 118
——miliacea Muhl. 122
——mirabilis Dew. 107
——mitchelliana Curt. 122
Carex monile Tuckm. 128
——*muhlenbergii* Schkr. 112
Carex multiflora Muhl. 113
——multiflora var. microsperma Dew. 113
Carex muskingumensis Schwein. 109
Carex mutica R. Br. 118
——neglecta Tuckm. 112
——novae-angliae var. emmonsii Car. 117
——oakesiana Dew. 129
——oederi S. and T. 119
Carex oligosperma Michx. 129
Carex orthostachys C. A. Mey. 124
——pachystylis Gay 115
——pallida C. A. Mey 109

Carex panicea var. canbyi Oln. 128
——panicea var. meadii Oln. 118
——paniculata var. teretiuscula Wahl 114
——paradoxa Boott 114
——patula Huds 130
Carex pauciflora Lightf 130
Carex paupercula Michx 122
— paupercula Torr 118
Carex pedunculata Muhl 117
Carex pellita Muhl 125
Carex pennsylvanica Lam. 117
Carex pinetorum Schlecht 112
——pinguis Bail 108
Carex polytrichoides Muhl 116
Carex prairea Dew 114
Carex prasina Wahl 122
——*pseudocyperus* Linn. 126
——*pseudocyperus* var. *americana* Hochst. 126
Carex pseudocyperus var. comosa Boott 126
——pseudocyperus S. and T. 126
——purshii Oln 127
——pyriformis Schwein 118
——remota Rich 110
Carex retrorsa Schwein 127
Carex reversa Gilib 126
——reversa Spreng 127
——richardii Thuill 110
Carex richardsoni R. Br 117
——*riparia* Curt 124
——*rosea* Schkr 112
Carex rosea var. minor Boott. 112
Carex rosea var. *radiata* Dew 112
Carex rostrata Willd 127
——rostrata var. utriculata Bail 128
Carex sartwellii Dew 113
Carex scabrior Sartw 113
Carex schweinitzii Dew 127
——*scirpoides* Schkr 111
——*scoparia* Schkr 108
Carex scoparia var. lagopodioides Torr 108
——scoparia var. minor Boott 108
——scoparia var. muskingumensis Schwein 109
——setacea Dew 113
——siccaeformis Boott 115
Carex siccata Dew 109
Carex splendida Willd 125
——sprengelii Dew 121
Carex squarrosa Linn 126
Carex stellulata var. angustata Car 111
——stellulata var. radiata Wahl 111
——stellulata var. scirpoides Car 111
Carex stenophylla Wahl 115
Carex sterilis Willd 111
——sterilis var B. Torr 111
Carex sterilis var. G. Torr 111
Carex stipata Muhl 115
Carex stipata var. maxima Chap 115
——straminea Schkr 106
Carex straminea Willd 106
——*straminea* var. *brevior* Dew 106
Carex straminea var. crawei Boott 107
——straminea var. cristata Tuckm 109
——straminea var. festucacea Tuckm 106
——straminea var. hyalina Gray 107
——straminea var. meadii Boott 107
——straminea var. minor Dew 106
Carex straminea var. *mirabilis* (Dew.) 107
Carex straminea var. schkuhrii Car 106
——straminea var. tenera Boott 106
——straminea typica Boott 107
——straminea var. typica Gray 107
——striata Car 124
——striatula Michx 119
Carex stricta Lam 123
Carex strictior Dew 123
Carex sychnocephala Car 106
Carex sylvatica Dew 121
Carex tenella Schkr 112
Carex tenera Sartw 106
——tenera *forma* erecta Oln. 106
——tenera var. suberecta Oln 107
——tentaculata Muhl 127
Carex tenuiflora Wahl 110
——*teretiuscula* Good 114
Carex teretiuscula var. major Koch 114
Carex teretiuscula var. *ramosa* Boott 114
——*tetanica* var. *meadii* (Dew.) 107
Carex thurberi Dew 127
——tomentosa Lightf 125
——torreyana Dew 120
Carex tribuloides Wahl 108
——*tribuloides* var. *bebbii* (Oln.) 109
——*tribuloides* var. *cristata* (Schwein.) 109
Carex tribuloides var. reducta Bail 109
Carex trichocarpa Muhl 124
——*trichocarpa* var. *aristata* (R. Br.) 124
Carex trichocarpa var. turbinata Dew 124
Carex trisperma Dew 110

Carex *tuckermanni* Dew....... 128
Carex typhina Michx......... 126
——typhinoides Schwein... 126
Carex utriculata Boott....... 128
——*varia* Muhl............ 117
Carex vaseyi Dew............ 128
——virginiana var. elongata Boeck................ 123
——viridula Michx......... 119
——vitilis var. pallida Oln. 111
——vulgaris Bail.......... 123
——vulpina Car........... 115
——vulpinaeformis Tuckm.. 113
Carex vulpinoidea Michx...... 113
Carex vulpinoidea Torr...... 115
Carex Raf.................. 105
Caroxylon Thunb............ 213
Carphephorus Cass.......... 503
Carpinus Linn............. 186
Carpinus americana Lam..... 186
——betula virginiana Marsh 186
Carpinus caroliniana Walt.... 186
Carpinus ostrya Linn........ 187
——ostrya var. americana Michx.............. 187
——triflora Moench........ 187
——virginiana Michx. f..... 186
——virginiana Mill........ 187
Carpophora Klotzsch........ 219
Carpophyllus Schott......... 500
Carum Baill................. 393
——aureum B. and H....... 394
——cordatum B. and H..... 393
Carya Nutt.................. 177
——alba Nutt.............. 178
——amara Nutt............ 178
——cathartica Bart........ 177
——microcarpa Nutt....... 178
Caryochloa Spreng........... 57
Caryophyllaceae........... 219
Caryophyllata Tourn........ 299
——alba Moench........... 301
Casalea St. Hil.............. 241
Cassandra Don.............406, 407
Cassia Linn................ 309
——*chamaecrista* Linn....... 309
Cassia fasciculata Michx..... 309
——pulchella Salisb........ 309
Cassida Moench............. 447
Cassine Harv. and Sond..... 348
Cassiniaceae Sch.-Bip........ 499
Castalia Salisb.............. 227
——odorata Greene........ 228
——ordorata Woodv. and Wood.............. 228
——pudica Salisb.......... 228
——reniformis Cov......... 227
——tuberosa Greene....... 227
Castaneaceae Baillon.....186, 190
Castanopsis (*Sect.*)........... 190
Castellia Tin................ 82
Castilleja Linn. f............ 470
Castilleja acuminata Spreng. 470
Castilleja coccinea (Linn.)..... 471
Castilleja grandiflora Spreng. 470
Castilleja pallida var. *acuminata* (Pursh.)............. 470
Castilleja pallida var. septentrionalis Gray....... 470
——septentrionalis Lindl.. 470
Castilleja sessiliflora Pursh.... 470
Catabrosa elodes R. and S..... 78
Catacline Edgew............ 327
Catapodium Link............ 82
Catenaria Benth............ 319
Catha Endl.................. 348
Cathartocarpus Pers......... 309
Cathartolinum Reich........ 335
Cathea Salisb.............. 175
Cathea tuberosa (Linn.)........ 175
Catonia Moench............ 567
Caturus Linn. *ex* Kuntze.... 198
Caturus Linn. *ex* Schreb.... 341
Caulinia Willd.............. 40
——flexilis Willd.......... 40
Caulophyllum Michx........ 250
——thalictroides Michx.... 250
Cavinium Thou............. 409
Ceanothus Linn............ 355
Ceanothus americanus Linn.... 356
Ceanothus herbaceus Raf.... 356
——intermedius Hook...... 355
——intermedius Raf....... 356
——officinalis Raf.......... 356
——ovalis Big.............. 355
Ceanothus ovatus Desv........ 355
Ceanothus perennis Pursh... 356
——sanguineus Nutt....... 356
——trinervus Moench...... 356
Celastraceae............... 348
Celastrophyllum............... 349
Celastrus Linn................ 348
——bullatus Linn.......... 349
Celastrus scandens Linn...... 349
Celtideae Endl.............. 192
Celtis Linn.................. 194
Celtis alba DC............... 194
——canina Raf............. 194
——crassifolia Lam......... 194
——mississippiensis Bosc... 194
Celtis occidentalis Linn....... 194
——obliqua Moench........ 194
——pumila Pursh.......... 194
Cenchrus Linn............... 52
——carolinianus Walt..... 52
——echinatus Muhl........ 52
Cenchrus tribuloides Linn...... 52
Centauropsis DC............. 499
Centrapalus Cass............ 499
Centrocarpha Don........... 537
——triloba Don............ 538
Centrochilus Schauer....... 165
Centropappus Hook. f....... 554
Centrophorum Trin.......... 47
Centunculus Linn............ 415
Centunculus lanceolatus Michx............... 415
Centunculus minimus Linn.... 415

Cepa Salisb 147
——schoenoprasum Moench 148
Cephalonoplos Neck 558
Cephalophora Cav 547
Cephalorhyncus Boiss 560
Cephaloschoenus Nees 104
Cephaloxys Desvx 138
Ceramiocephalum Sch.-Bip 567
Ceranthera Moench 458
Ceraseidos S. and Z 306
Cerasophora Neck 306
Cerastium Linn 223
——*arvense* Linn 223
——*arvense* var. *bracteatum* (Raf.) 223
Cerastium arvense var. oblongifolium Britt & Holl 223
Cerastium arvense Pursh 223
——bracteatum Raf 223
——elongatum Pursh 223
——glutinosum Nutt 224
——longipedunculatum Muhl 224
Cerastium nutans Raf 224
Cerastium oblongifolium Anders 224
——oblongifolium Torr 223
——pennsylvanicum Hook 223
——pennsylvanicum Horn 223
——pubescens Gold 223
——tenellum Fenzl 224
——tenuifolium Pursh 223
——villosum Muhl 223
Cerasus Juss 306
Cerasus americana Hook 305
——borealis Michx 308
——densiflora Spach 307
——depressa Ser 306
——duerinckii Mart 307
——fimbriata Spach 307
——glauca Moench 306
——hiemalis DC 305
——hirsuta Spach 307
——micrantha Spach 307
——nigra Hook 305
——obovata Beck 307
Cerasus pennsylvanica (Linn. f.) 307
Cerasus persicifolia Lois 308
Cerasus pumila (Linn.) 306
——*serotina* (Ehrh.) 306
Cerasus serotina Hook 307
Cerasus virginiana (Linn.) 307
Cerasus virginiana var. B. T. and G 307
——virginiana Michx 306
Ceratocapnos Dur 254
Ceratocephalus Moench 241
Ceratocephalus Vaill 545
Ceratochloa Beauv 84
Ceratophyllaceae 229
Ceratophyllum Linn 229
——*demersum* Linn 229
Ceratosanthus Schur 234
Ceratoschoenus Nees 104
Cercostylos Less 548
Ceremanthe Reich 459
Cerophyllum Spach 278
Cestichis Thou 173
Chaeradoplectron Schau 165
Chaerophyllum aristatum Thunb 398
Chaetaria Beauv 56
Chaetobromus Nees 69
Chaetocyperus Nees 99
——urceolatus Leibm 100
Chaetodiscus Steud 136
Chaetoptelea Liebm 193
Chamaebuxus DC 337
Chamaecalamus Meyen 64
Chamaecrista E. Mey 309
Chamaedaphne calyculata Moench 407
Chamaedrys Moench 455
Chamaemespilus Med 283
Chamaepeuce DC 558
Chamaeplium Spach 257
Chamaerhodes Bunge 293
Chamissonia Link 381
Chamoenerium Tausch 376
——angustifolium Spach 379
Chamoletta Adans 160
Chapelliera Nees 103
Cheilyctis Raf 450
Cheiranthus asper Nutt 268
——hesperioides T and G 256
Cheiropsis DC 240
Cheiropterocephalus Rodrig 172
Cheliusa Sch.-Bip 499
Chelone Linn 460
Chelone alba Pursh 460
——alba Spreng 461
Chelone glabra Linn 460
Chelone gracilis Spreng 462
——grandiflora Spreng 461
——hirsutus Linn 462
——pentstemon Linn 462
Chenopodiaceae 211
Chenopodium Linn 211
Chenopodium album Bosc 212
Chenopodium boscianum Moq 212
——*capitatum* (Linn.) 212
——*rubrum* Linn 211
Chesneya Bert 394
Chilocalyx Kl 270
Chimaphila Pursh 402
——corymbosa Pursh 402
——maculata Pursh 402
——umbellata Nutt 402
Chiogenes Salisb 407
——*hispidula* (Linn.) 407
Chiogenes japonica Gray 407
——serpyllifolia Salisb 407
Chitonia Salisb 144
Chloris curtipendula Muhl 71
Chlorocrepis Griseb 568
Chloromeles Decn 283
Chomelia Vel 350
Chondrilla illinoensis Poir 566

Chondrolomia NEES.......... 105
Chondrosea HAW............ 274
Chondrosium DESVX........... 70
——foenum TORR........... 71
——hirtum HBK........... 71
——oligostachyum TORR... 72
Chorisis DC.............. 560
Chorisma DON.............. 560
Christophoriana TOURN...... 232
Chroilema BERNH........... 514
Chromolaena DC............ 501
Chronopappus DC........... 499
Chrosperma RAF............ 144
Chrysa RAF................ 231
——borealis RAF........... 231
Chrysamphora GREENE....... 271
Chrysanthemum carolinianum WALT.......... 515
Chrysion SPACH............ 366
Chrysis REN............... 539
Chrysobalaneae ENDL......... 281
Chrysobotrya SPACH......... 278
Chrysocoma graminifolia LINN 508
——tomentosa ELL.......... 500
Chrysocoptis NUTT.......... 231
Chrysomelea TAUSCH......... 543
Chrysoma NUTT............. 508
Chrysopogon TRIN........... 47
——nutans BH............. 48
Chrysophthalmum PHIL...... 506
Chrysopsis NUTT........... 507
——alba NUTT............. 516
——amygdalinus NUTT...... 516
——canescens T. and G..... 507
——echioides BENTH....... 507
——villosa NUTT........... 507
Chrysosplenium LINN........ 277
——*americanum* SCHW....... 277
Chrysostemma LESS.......... 543
Chylisma SPACH............ 381
Chylocalyx HASSK........... 204
Cicerbita WALLR........... 560
Cicerella MOENCH.......... 313
Cicercula ALEF............ 313
Cichorium BAILL........... 564
Cicuta LINN.............. 395
——*bulbifera* LINN......... 395
Cicuta maculata LINN........ 395
——perennans WALT........ 397
Cicuta virosa var. *maculata* (LINN.).............. 395
Cicutaria TOURN........... 395
——bulbifera LAM.......... 395
——maculata LAM.......... 395
Ciliaria HAW.............. 274
Cimicifuga LINN........... 232
Ciminalis ADANS........... 418
Cinchonaceæ LINDL......... 478
Cineraria LINN............ 553
——canadensis WALT........ 553
——congesta R. BR......... 557
——heterophylla PURSH.... 556
——palustris LINN......... 557
——pratensis HERD......... 555
Cinna LINN............... 64
——*arundinacea* LINN....... 64
Cinna latifolia GRISEB....... 64
——mexicana LINK.......... 59
——racemosa KUNTH........ 60
——sobolifera LINK......... 60
——tenuiflora LINK......... 59
Cinnastrum FOURN.......... 66
Cionisaccus BREDA.......... 171
Circaea LINN............. 379
——*alpina* LINN........... 380
Circaea canadensis HILL...... 380
Circaea lutetiana LINN....... 380
Circaea lutetiana var. canadensis LINN.......... 380
Cirsium DC............... 558
——bigelovii DC........... 558
——discolor SPRENG......... 559
——diversifolium DC....... 559
——muticum MICHX......... 558
——pumilum SPRENG........ 558
Cissampelopsis MIQ......... 553
Cissampelos smilacina LINN.. 251
Cissus hederacea PERS....... 357
Cistaceæ.................. 364
Cistus LINN............... 365
——canadensis HILL........ 365
Cladium P BR.............. 103
——mariscoides TORR....... 104
——triglomeratum NEES.... 105
Cladopogon SCH.-BIP........ 554
Cladoraphis FRANCH......... 74
Clandestinaria SPACH........ 259
Claotrachelus ZOLL.......... 500
Clavula acicularis DUM....... 100
——ovata DUM............ 102
——palustris DUM.......... 101
Claytonia LINN............ 218
Claytonia acutiflora SWEET... 218
——grandiflora SWEET...... 218
Claytonia virginica LINN...... 218
Cleistes L. C. RICH.......... 169
Clematis LINN............. 240
Clematis cordata PURSH...... 240
Clematis hirsutissima PURSH. 239
Clematis virginiana LINN...... 240
Cleome LINN............... 269
Cleome dodecandra MICHX.... 270
——integrifolium T. and G. 270
Cleome serrulata PURSH....... 270
Cleome viscosa SPRENG....... 270
Clethraceae B. and H......... 405
Clethropsis SPACH........... 189
Clidanthera R. BR........... 322
Clinopodium LINN em. BENTH 451
——vulgare LINN.......... 451
Clintonia RAF.............. 151
——*borealis* (AIT.).......... 151
Cliocarpus MIERS........... 458
Cliococca BAB.............. 335
Clomena BEAUV............. 58
Clomenocoma CASS.......... 548
Clymenum TOURN........... 313
Clypeola caroliniana WALT... 257

Cneoraceae Baill 336
Cnicus Linn 558
——*altissimus* (Linn.) 559
Cnicus altissimus var. discolor Gray 559
Cnicus discolor Muhl 559
Cnicus glutinosus Bigel 558
Cnicus muticus (Michx.) 558
——*odoratus* (Muhl.) 558
Cnicus pumilus Torr 558
Cnicus undulatus (Nutt.) 559
Codariocalyx Hassk 319
Codomia Gaud 364
Codonoprasum Reich 147
Codonorchis Lindl 169
Coelachyrum Nees 74
Coelantha Borkh 418
Coeloglossum Hart 165
Coleataenia Gris 49
Coleonema Max 263
Coleosanthus Cass 501
Collinaria Ehrh 77
Collomia Nutt 433
——*linearis* Nutt 433
Colobachne Beauv 61
Colobanthus Trin 76
Coluria R. Br 299
Comaclinium Scheidw 548
Comandra Nutt 200
——*livida* Rich 200
——*pallida* A. DC 200
——*umbellata* (Linn.) 200
Comaropsis L. C. Rich 299
Comarostaphylis Zucc 408
Comarum Linn 293
——angustifolium Raf 296
——digitatum Raf 296
——palustre Linn 296
Commelina dubia Jacq 138
Commelinaceae 136
Comperia C. Koch 164
Compositae 499
Comptonia Banks 178
——asplenifolia Banks 179
Conobea borealis Spreng 464
Conoclinium DC 501
Consolea Lemaire 371
Consolida Lindl 234
Convallaria biflora Walt 155
——bifolia Linn 152
——caniculata Willd 154
——commutata Schult 154
——multiflora Michx 155
——parviflora Poir 155
——quadrifida Lam 152
——racemosa Linn 154
——stellata Linn 153
——tetrapetala Gilib 152
——trifolia Linn 153
——umbellata Torr 151
Convolvulaceae 427
Convolvulus sepium Linn 428
——spithameus Linn 428
Conyza Linn 525
Conyza asteroides Linn 524
Conyzella Rupr 255
Coppoleria Todar 315
Coprosmanthus Kunth 157
——herbaceus Kunth 158
Coptis Salisb 231
——trifolia Salisb 231
Coralliorhiza Pfitz 174
Corallorhiza R. Br 174
——*corallorhiza* (Linn.) 174
Corallorhiza dentata Host 175
——halleri Rich 175
——hiemalis Bart 176
Corallorhiza innata Nutt 174
——innata R. Br 174
——intacta Cham. and Schlecht 175
Corallorhiza multiflora Nutt 174
Corallorhiza verna Nutt 175
Cordiaceae Endl 436
Cordylestylis Falc 171
Cordylia Blume 169
Coreopsides Moench 543
Coreopsis Linn 543
Coreopsis aristata Willd 544
Coreopsis aristosa Michx 544
Coreopsis aurea Lindl 544
——bidens Linn 546
——pidens Walt 545
Coreohsis palmata Nutt 544
Coreopsis pauciflora Lehm 544
——perfoliata Walt 545
——praecox Fres 544
Coreopsis tinctoria Nutt 544
——*trichosperma* Michx 544
Coreosma Spach 278
——florida Spach 279
Coresanthe Alef 160
Corethrum Vahl 70
Coridochloa Nees 49
Corispermum Linn 212
——*hyssopifolium* Linn 212
Corispermum patens Fisch 212
——squarrosum Vahl 212
Cormus Spach 283
Cornaceae 399
Cornus Linn 399
Cornus alba Lam 401
——alba Walt 401
——albida Ehrh 400
——alterna 400
Cornus alternifolia Linn. f. 400
——*asperifolia* Michx 400
Cornus baileyi 401
Cornus canadensis Linn 399
——*candidissima* Marsh 400
——*circinatus* L'Her 401
Cornus herbacea var. canadensis Pall 399
——lanuginosa Michx 401
——obliqua Raf 401
——paniculata L'Her 400
Cornus racemosa Lam 400
——sanguinea Marsh 401

Cornus sericea Linn 401
Cornus sericea var. asperifolia DC 400
Cornus stolonifera Michx 401
Cornus stricta Lam 400
Cornucopia perennans Walt 65
Cornucopia hiemalis Walt 65
Corona-solis Tourn 539
Coryanthus Nutt 450
Corydalis DC 254
——aurea Willd 254
——aurea var. micrantha Engelm 255
——canadensis Goldie 253
——cucullaria Pers 253
——flavula DC 255
——formosa Pursh 253
——glauca Pursh 255
——micrantha Wats and Coult 255
——sempervirens Pers 255
——speciosa Max 254
Corylaceae Lindl 186
Corylus Linn 187
——*americana* Walt 188
Corylus avellana Led 187
——humilis Willd 188
Corylus rostrata Ait 187
Corylus rostrata var. mandschurica Regel 187
Corynandra Schrad 270
Corynostigma Presl 375
Cosmanthus Nolte 435
—— fimbriatus A.DC 436
Costia Willk. (1858) 85
Costia Willk. (1860) 160
Costinus Tourn 346
Coulterina O.K 263
Courtoisia Reich 433
Cracca Linn 327
Cracca caroliniana Alef 316
Cracca virginiana (Linn.) 328
Cracca Riv 315
Crassulaceae 273
Crassocephalum Moench 554
Crataegus Linn 287
Cratægus carrierei Carr 287
Crataegus coccinea Linn 288
Crataegus coccinea var. mollis T. and G 288
——coccinea var. oligandra T. and G 288
——coccinea var. viridis T. and G 288
——coronaria Salisb 284
Crataegus crus-galli Linn 287
Crataegus crus-galli var splendens Ait 287
——glandulosa var. rotundifolia Regel 288
——latifolia Pers 288
——laurifolia Med 287
——lavallei Hort. Par 287
——leucophaeus Moench 289
Crataegus lobata Bosc 289
——lucida Mill 287
Crataegus mollis Scheele 288
Crataegus pyrifolia Ait 289
——pyrifolia Lam 284
——racemosa Lam 286
——rotundifolia Moench 288
——serrulata Poir 284
——subvillosa Torr 288
——texana Buckl 288
——tomentosa Emers 288
Crataegus tomentosa Linn 289
Crataegus tomentosa var. mollis Gray 288
——tomentosa var. pyrifolia Gray 289
——viridis Ell 288
——watsoniana Roem 287
Cratericarpum Spach 381
Cremocephalum Cass 554
Cremopyrum Schur 85
Crepidium Blume 172
Crepidium Nutt 568
——runcinatum Nutt 568
Crepidium Tausch 567
Crepidospermum Fr 568
Crepinea Reich 567
Crepis Linn 567
Crepis biennis var. americana DC 568
——biennis var. B. Hook 568
Crepis runcinata (James) 568
Crinipes Hochst 69
Crinita Moench 516
Crinitaria Cass 515
Criosanthes Raf 162
Critesion Raf 86
——geniculatum Raf 87
Critho E. Mey 86
Crithopsis Jaub et Spach 86
Critonia DC 501
—— kuhnia Gaertn 503
Critoniopsis Sch.-Bip 499
Crocanthemum Spach 364
Crossostigma Spach 376
Crotalopsis Michx 310
Cruciferae 256
Cryosanthes borealis Raf 164
Cryptoceras Schott 254
Cryptoglochin Heuffl 105
Cryptolobus Spreng 311
Cryptopleura Nutt 564
Cryptostachys Steud 62
Cryptotaenia DC 397
——canadensis DC 397
Crystallopollen Steetz 499
Cubospermum Lour 375
Cucubalus Spach 219
——niveus Nutt 220
——stellatus Linn 221
Cucullaria bulbosa Raf 253
Cucurbitaceae 493
Cujunia Alef 315
Cunila hispida Spreng 451

Cunonieae B. and H. 274
Cupameni ADANS. 340
Cupuliferae B. and H. 186, 190
Curtisia SCHREB. 337
Curtopogon BEAUV 56
Cuscuta LINN 427, 429
Cuscuta americana LINN (*Gronov.*) 429
——arvensis BEYR. 430
——arvensis var. calycina ENGELM. 430
——arvensis var. pentagona ENGELM. 430
——arvensis var. verrucosa ENGELM. 430
Cuscuta cephalanthi ENGELM.. 430
Cuscuta chlorocarpa ENGELM. 431
Cuscuta coryli ENGELM. 430
Cuscuta glomerata CHOIS. 429
Cuscuta gronovii WILLD. 429
Cuscuta gronovii var. latiflora ENGELM 430
Cuscuta gronovii var. *saururi* (ENGELM.) 430
Cuscuta inflexa ENGELM. 430
Cuscuta paradoxa RAF. 429
Cuscuta pentagona ENGELM.. 430
Cuscuta polygonorum ENGELM. 431
Cuscuta saururi ENGELM. 430
——tenuiflora ENGELM. 430
——umbrosa BEYR. 429, 430
——verrucosa ENGELM. 430
——vulgivaga ENGELM. 429
Cuscutaceae LINDL. 427
Cuscutina PFEIFF. 429
Cussutha DESM. 429
Cuviera KOEL. 86
Cyamus SM. 225
——lutea NUTT. 226
——pentapetalus PURSH. ... 226
Cyanthillium BL. 499
Cyanopis DC. 499
Cyanoseris SCHUR. 560
Cyanotris RAF. 151
Cyathostyles SCHOTT. 458
Cybele FALC. 165
Cyclachaena FRES. 533
——*xanthiifolia* (NUTT.). 533
Cyclobalanopsis OERST. 190
Cyclobalanus OERST. 190
Cyclomorium WALP. 319
Cyclopogon PRESL. 170
Cycnogeton ENDL. 41
Cydonia TOURN. 283
Cylactis RAF. 289
——montana RAF. 292
Cylindropus NEES. 105
Cylipogon RAF 328, 329
Cymbidium corallorhiza SW. .. 174
——hiemale MUHL. 176
——liliifolium WALT. 174
——loeselii SW 173
——nemoralis SW. 175
——neottia SCOP. 174
Cymbidium pulchellum WILLD 175
Cymbophyllum F. MULL. 465
Cymbopogon SPRENG. 47
Cymboseris BOISS. 567
Cynocardamum WEBB. 256
Cynoglossospermum SIEG. 440
Cynoglossum LINN. 441
Cynoglossum amplexicaule MICHX 441
——morisoni DC. 440
——pilosum NUTT. 441
Cynoglossum virginicum LINN.. 441
Cynorhiza E. and Z. 390
Cynosurus erucaeformis AIT.. 72
——secundus PURSH. 71
Cynthia DON. 564
——amplexicaulis BECK. 564
——griffithii NUTT. 564
——virginica DON. 564
Cyperaceae 89
Cyperella CRAM. 142
Cyperella campestris var. *multiflora* (EHRH.). 143
Cyperites 97
Cyperus LINN. 90
Cyperus acicularis WITH. 100
——alterniflorus SCHWEIN.. 92
Cyperus aristatus ROTTB. 93
Cyperus bicolor BARTR. 93
——castaneus BIGEL. 93
——confertus CHAPM. 93
Cyperus diandrus TORR. 93
——*diandrus* TORR. var. *castaneus* (BIGEL.). 93
Cyperus elliottianus R and S. 93
Cyperus erythrorhizos MUHL... 92
Cyperus erythrorhizos TORR.. 91
Cyperus esculentus LINN. 92
Cyperus filiculmis VAHL 92
Cyperus flavescens var. castaneus PURSH. 93
——flavicomus MICHX. 91
——inflexus MUHL. 93
——mariscoides ELL. 92
——michauxianus SCHULTES 91
——michauxianus TORR. ... 91
——phymatodes MUHL. 92
——repens ELL. 92
——rivularis KUNTH. 93
Cyperus schweinitzii TORR. 92
Cyperus spathaceus LINN. 90
Cyperus speciosus VAHL. 91
Cyperus stenolepis WATS. 91
——strigosus LAM. 91
Cyperus strigosus LINN. 91
——*strigosus* var. *compressus* BRITT. 91
Cyperus uncinatus PURSH. 93
Cyphiaceae DC. 494
Cyphomanera SENDT. 458
Cyprianthe SPACH. 241
Cypripedilum LINN em. PFITZ. 162
——*acaule* AIT. 162
Cypripedilum album AIT. 163

Cypripedilum arietinum R. Br. 164
Cypripedilum calceolus Mich. 163
——calceolus var. G. Linn. 163
——calceolus Walt 163
——canadense Michx 163
Cypripedilum candidum Muhl. 164
Cypripedilum hirsutum Mill. 163
——humile Salisb 162
Cypripedilum parviflorum Salisb 163
——*pubescens* Willd 163
Cypripedilum reginae Walt. 163
Cypripedilum spectabile Sw 163
Cypripedium *see* Cypripedilum.
Cysticapnos Boehr 254
Cyrtotropis Wall 315
Czernaevia Turcz 391
Czernya Presl 73
Czernia arundinacea Pr 73

D

Dactylanthes Haw 341
Dactylicapnos Wallich. 253
Dactylis cristata M. B 77
——cynosuroides Linn 69
Dactylophyllum Spenn 293
Dalea Linn 329
Dalea alopecuroides Willd 330
——candida Willd 329
——cliffortiana Willd 330
Dalea dalea (Linn.) 330
Dalea linnaei Michx 330
——parviflora Pursh 325
——pedunculata Pursh 330
——villosa Spreng 328
Dalibarda Linn 288
——repens Linn 290
——violaeoides Michx 290
Danaa Colla 554
Danthonia DC 69
——*spicata* (Linn.) 69
Dantia Thou 375
Daphnidostaphylis Kl 408
— fendleriana Kl 408
Daphniphyllaceae Mull 340
Daphnoideae Endl 372
Darlingtonia DC 308
——brachyloba DC 308
——brevifolia Raf 308
Dasanthera Raf 461
Dasyphora floribunda Raf 295
Dasystephana Borkh 418
Dasystoma Raf 468
Dasystoma drummondii Benth 468
——pedicularia Benth 468
—— quercifolia Benth 488
Datisca hirta Linn 347
Decastemon Kl 270
Decemium Raf 434
——hirtum Raf 435
Deeringia Adans 397
——*canadensis* (Linn.) 397
Delaira Lem 554
Delphiniastrum Spach 234
Delphinium Linn 234
Delphinium azureum Michx 234
Delphinium carolinianum Walt 234
——*exaltatum* Ait 234
Delphinium simplex Gray 234
Delphinium tricorne Michx 234
Delphinium tridactylum Michx 234
——urceolatum Jacq 234
——vimineum Don. 234
——virescens Nutt 234
Delostylis Raf 156
Delucia DC 545
Demetria Lag 506
Dendrocnide Miq 197
Dendrolobium Benth 319
Denhamia Meissn 348
Dens-Leonis Tourn 562
Dentaria Linn 261
——concatenata Michx 262
——diphylla Michx 262
——laciniata Muhl 262
Depierrea Anon 494
Dermasea Haw 274
Deroemeria Reich. f. 165
Derouetia Boiss 567
Descantaria Schlecht 136
Deschampsia Beauv 67
——*caespitosa* (Linn.) 68
Descurainia Web 257
Desmanthus Willd 308
—— brachylobus Benth 308
——illinoensis MacM 308
Desmodium Desvx 319
——acuminatum DC 321
—— aikinianum Beck 320
——boottii Torr 320
——canadense DC 319
——canescens DC 320
——dillenii Darl 320
——grandiflorum DC 321
——marylandicum DC 320
——nudiflorum DC 321
——paniculatum DC 320
——viridiflorum DC 320
Desmoschoenus Hook. f. 97
Deyeuxia Clar 66
——*canadensis* (Michx.) 66
——*neglecta* (Ehrh.) 66
Diachyrium Griseb 62
Dialesta HBK 499
Dialypetalum Benth 497
Dianthera Kl 269
Diaphane Salisb 160
Diaphora Lour 105
Diastatea Scheidw 497
Dicentra Bernh 253
——cucullaria DC 253
——eximia Beck 253
Dicerma DC 319
Dichaetophora A. Gray 515
Dichantium Willem 47
Dichodon Bartl 223

Dichostylis BEAUV 97
Dichostylis NEES 90
Dichotophyllum DILL 229
Dichotophyllum KL. and G. 341
Diclidium SCHRAD 91
Diclytra BORKH 253
——canadensis DC 253
——cucullaria AUCT 253
Dicotyledones 176
Didymochaeta STEUD 64
Didymoplexis GRIFF 169
Diectomis HBK 47
Dienia LINDL 172
Diervilla LINN 486
Diervilla canadensis WILLD 487
Diervilla diervilla (LINN.) 487
Diervilla humilis PERS 487
——lutea PURSH 487
——tournefortii MICHX 487
——trifida MOENCH 487
Dieteria NUTT 515
——spinulosa NUTT 514
Digitaria RICH 49
Digraphis TRIN 54
——arundinacea TRIN 55
Dileptium diffusum RAF 257
——praecox RAF 257
Dilepyrum RAF 57
——aristosum MICHX 61
——minutiflorum MICHX 59
Dimorphanthus CASS 525
Dimorphanthus MIQ 385
Dimorphostachys FOURN 49
Dinebra DC 70
Diodonta NUTT 543
——aristosa NUTT 544
——coronata NUTT 544
Diomedia BERT. and COLL 539
Dioscorea LINN 160
Dioscorea paniculata MICHX 160
——quinata WALT 160
Dioscorea villosa LINN 160
Dioscoreaceae 159
Diosmeae ENDL 336
Diplacrum R. BR 105
Diplacus NUTT 462
Diplarrhenus RAF 96
Diplasanthus DESVX 47
Diplochaeta NEES 104
Diplogon RAF 507
——*villosum* (PURSH) 507
Diplopappus CASS 515
——albus HOOK 516
——amygdalinus T. and G. 516
——dubius CASS 527
——hispidus HOOK 507
——pinnatifidus HOOK 514
——umbellatus T. and G. 516
——umbellatus var. pubens GRAY 516
——villosus HOOK 507
Diplophyllum LEHM 465
Diplosastera TAUSCH 543
Diploscyphum LIEBM 105
Diplotaenia BOISS 390
Diplotheca HOCHST 323
Diptera BORKH 274
Dirca LINN 372
——*palustris* LINN 372
Disarrenum LABILL 55
Discomela RAF 539
Disgrega HASSK 136
Disocarpus LIEBM 197
Dissorhynchium SCHAUER 165
Distegocarpus S. and Z 186
Distephanus CASS 499
Disterigma KL 410
Distichmus RAF 96
Distimus RAF 90
Disynaphia DC 501
Diurospermum EDJW 473
Dobrowskia PRESL 497
Doellingera NEES 515
——ptarmicoides NEES 516
Dofia ADANS 372
Dolichos polystachyos LINN 312
Dolicotheca CASS 543
Dollinera ENDL 319
Dollineria SAUT 263
Donax borealis TRIN 80
——festucaceus BEAUV 79
Donia R. BR 506
——squarrosa PURSH 506
Dorema DON 390
Doria ADANS 508
Dorobaea CASS 554
Doronica WIGHT 554
Doronicum ramosum WALT 526
Dortmanna NECK 497
Dorynchium MOENCH 330
Dougaldia CASS 547
Draba LINN 263
——*caroliniana* WALT 264
Draba caroliniana var. micrantha GRAY 264
——hispidula MICHX 264
Draba micrantha NUTT 264
Draba nemoralis EHRH 263
Draba nemorosa LINN 263
Draba nemorosa var. hebecarpa LED 263
——nemorosa var. lejocarpa LED 263
Draba verna LINN 264
Draba verna var. americana PERS 264
——umbellata MUHL 264
Drabopsis G. KOCH 257
Dracaena borealis AIT 151
Dracocephalum LINN 448
Dracocephalum lancifolium MOENCH 446
Dracocephalum parviflorum NUTT 448
Dracocephalum variegatum VENT 446
——virginianum LINN 446
Dracontium foetidum LINN 131

Dracopsis CASS 537
Dregea E. and Z. 390
Drosanthe SPACH 362
Drosera LINN 272
Drosera americana WILLD 272
——anglica HUDS 272
——foliosa ELL 272
Drosera intermedia DREV. and HAYNE 272
——*intermedia* DREV. and HAYNE var. *americana* (WILLD.) 272
——*linearis* GOLD 272
Drosera longifolia LINN 272
——longifolia MICHX 272
Drosera rotundifolia LINN 273
Droseraceae 271
Drummondia DC 276
Drupaceae LINDL 281
Dryadanthe ENDL 293
Dubrueilia GAUDICH 198
Dubyaea DC 560
Duchesnia SM 292
Dufourea GREN 223
Dufresnia DC 492
Dulcamara MOENCH 458
Dulia ADANS 405
Dulichium PERS 90
Dulichium canadense PURSH 90
Dulichium spathaceus LINN 90
Dumreichera HOCHST 361
Duretia GAUDICH 198
——cylindrica GAUDICH 199
Dysmicodon NUTT 496
——californicum NUTT 496
——ovatum NUTT 496
Dyssodia CAV 548
Dyssodia chrysanthaemoides LAG 549
——fastigiata DC 549

E

Dyssodia papposa (VENT) 548
Eatonia RAF 76
——*obtusata* (MICHX.) 76
——*pennsylvanica* (DC.) 76
Echenais CASS 558
Echinacea MOENCH 536
——angustifolia DC 539
——pallida NUTT 539
——sanguinea NUTT 539
Echinocaulos HASSK 204
Echinochloa BEAUV 49
Echinocystis T. and G 493
——echinata BSP 494
——lobata T. and G 494
Echinolytrum DESVX 103
Echinomeria NUTT 539
Echinopepon NAUD 493
Echinoschoenus NEES 104
Echinospermum SW 440
——deflexum LEHM 441
——patulum LEHM 441
——pilosum BUCKL 441
Echinospermum redowskii var. occidentale WATS 441
Echinospermum strictum TORR 441
——virginianum HITCH 440
——virginicum LEHM 440
Echthronema HERB 161
Edwardsia NECK 545
Egeria PLANCH 45
Ehretiaceae LINDL 436
Ehrhartia WIGG 53
——clandestina WIGG 54
Einomenia KLOTZSCH 201
Elaeagnaceae 373
Elaeagnus LINN 373
Elaeagnus argentea NUTT 373
Elaeagnus argentea PURSH 373
Elaeagnus commutata BERNH 373
Elaterium trifoliatum LINN 493
Electra DC 543
Electrosperma F. MULL 136
Elephantodon SALISB 160
Eleocharis *see* Heleocharis.
Eleocharis calva TORR 102
——costata PR 100
——diandra WRIGHT 102
——glaucescens R. AND S 102
——leptophylla SCHULT 99
——obtusa SCHULTES 102
——polycaula WEND 101
——uniglumis SCHULTES 101
Eleochytris FENZL 390
Eleogenus NEES 99
——ovatus NEES 102
Eleogiton LINK 97
Elisanthe FENZL 219
Ellisia LINN 434
——ambigua NUTT 434
——nyctalea LINN 434
Elmigera REICH 461
Elodea L. C. RICH 45
——*canadensis* RICH and MICHX 46
Elodea SPACH 362
Elodes SPACH 362
——campanulata PURSH 364
——virginica NUTT 364
Elymus LINN 87
——*canadensis* LINN 88
——canadensis var. glaucifolius TORR 88
——caninus LINN 85
——*elymoides* (RAF.) 87
——glaucifolius WILLD 88
——hystrix LINN 89
——philadelphicus LINN 88
——sitanion R. and S 88
——*striatus* WILLD 88
——striatus var. villosus GRAY 88
——villosus MUHL 88
——*virginicus* LINN 88
Elytrigia DESVX 85
Elytrospermum C. A. MEY 97
Emilia CASS 554

Empusa LINDL.............. 173
Empusaria REICH........... 173
Encrypta NUTT.............. 434
Endodeca RAF............... 201
Endooles SALISB............ 144
Endoptera DC............... 567
Endusa ALEF................ 315
Enemion RAF................ 231
——biternatum RAF........ 231
Engelmannia BAILL.......... 531
Engelmannia PFEIFF......... 429
Endria VELLOZ.............. 384
Ephemerum MOENCH......... 136
Ephemerum REICH.......... 412
Ephippianthus REICH........ 173
Ephippiorhynchium NEES.... 104
Epicostorus RAF............ 281
Epigynium KL.............. 410
Epilepis BENTH............. 543
Epilinella PFEIFF........... 429
Epilobium LINN.............. 376
——alpinum GRAY.......... 377
——anagallidifolium AUCT. AM 377,378
——*angustifolium* LINN. em. 379
——*coloratum* MUHL......... 377
——densum RAF........... 378
——divaricatum RAF....... 377
——*hornemanni* RCHB....... 377
——*lineare* MUHL........... 378
——molle TORR............ 378
——oliganthum MICHX...... 378
——origanifolium LAM...... 377
——*palustre* LINN........... 378
——palustre var. lineare GRAY................ 378
——palustre var. oliganthum BSP............ 378
——pauciflorum SCHR. 379
——rosmarinifolium PURSH. 378
——spicatum LAM 379
——squamatum NUTT...... 378
——*strictum* MUHL......... 378
——tetragonum PURSH..... 377
Epipactis HALL. 171
——corallorhiza CR......... 174
Epipetrum PHIL 160
Epirhizanthus BLUME........ 338
Epitrachys K. KOCH......... 558
Eragrostis BEAUV 74
——*eragrostis* (LINN.). 75
——*hypnoides* (LAM.) 75
Eragrostis major HOST. 75
——megastachya LINK...... 75
——multiflora ASCH 75
Eragrostis pectinacea (MICHX.). 74
Eragrostis pectinacea var. spectabilis GRAY.......... 74
——poaeoides var. megastachya GRAY.... 75
Eragrostis purshii SCHRAD..... 74
Eragrostis reptans NEES...... 75
——spectabilis GRAY. 74
——vulgaris var. megastachya Coss. and Germ.. 75
Erechtites RAF............... 553
Erechtites erecta RAF....... 553
Erechtites hieracifolia (LINN.).. 553
Erechtites praelonga RAF..... 553
Eremanthe SPACH. 362
Eremopyrum LED........... 85
Eremosporus SPACH.......... 362
Eriachne PHILLIPPI.......... 49
Ericaceae................ 405
Ericaceae B. and H.......... 402
Ericala DON................. 418
Ericoila BORKH.............. 418
Erigeron LINN............... 525
Erigeron ambiguus NUTT..... 526
Erigeron annuus (LINN.)...... 527
Erigeron asper NUTT......... 526
——bellidifolius MUHL...... 526
Erigeron canadensis LINN..... 527
——*divaricatus* MICHX....... 527
——*glabellus* NUTT 526
Erigeron heterophyllus MUHL. 527
——integrifolius BIGEL..... 526
——nervosum PURSH. 526
——paniculatus LAM........ 527
——philadelphicus BART.... 526
Erigeron philadelphicus LINN.. 525
Erigeron pulchellus HOOK.... 526
——pulchellus var. a. HOOK. 525
Erigeron pulchellus MICHX..... 526
Erigeron purpureum AIT. 525
——purpureus HOOK........ 525
——pusillus NUTT.......... 528
Erigeron ramosus (WALT.)..... 526
Erigeron strictum DC........ 528
——strigosus BIGEL......... 527
——strigosus MUHL 526
——strigosus var. discoideus ROBBINS.... 526
Erinia NOUL................. 494
Eriocaulaceae............. 135
Eriocaulon LINN 136
Eriocaulon articulatum MORONG.............. 136
——decangulare HULL...... 136
——pellucidum MICHX 136
Eriocaulon septangulare WITH.. 136
Ericoma NUTT............... 57
Eriolepis CASS 558
Eriophorum LINN............ 94
Eriophorum augustifolium TORR................ 94
——augustifolium ROTH.... 95
——caespitosum HOST....... 95
Eriophorum cyperinum LINN.. 95
——*gracile* KOCH 96
Eriophorum gracile var. paucinervium ENGELM.... 94
Eriophorum latifolium HOPPE.. 95
——*lineatum* (MICHX.)....... 96
Eriophorum polystachion LINN *fl. suec*.......... 95
Eriophorum poly tachion LINN. *spec*.................. 95
Eriophorum polystachyon DC. 95

Eriophorum polystachyon var. latifolium Gray 95
Eriophorum pubescens Sm 95
Eriophorum triquetrum Hoppe 94
Eriophorum vaginatum Linn 95
——*virginicum* Linn 94
Eriophorum vulgare Pers 95
Eriostomum H. and L 445
Eriosynaphe DC 390
Eriphilema Herb 161
Erophaca Boiss 323
Erophila DC 263
——americana DC 264
——vulgaris DC 264
——vulgaris var. americana Darl 264
Erpetion DC 366
Ervites 316
Ervum Linn 315
——cracca Trautv 316
Ervum Tourn 315
Eryngium Linn 388
——*aquaticum* Linn 388
Eryngium yuccaefolium Linn 388
Erysimum Linn 268
——*asperum* (Nutt.) 268
Erysimum asperum var. inconspicuum Wats 268
Erysimum cheiranthoides Linn 269
Erysimum grandiflorum Nutt 268
Erysimum inconspicuum (S. Wats.) 268
Erysimum lanceolatum Hook 268
——lanceolatum Pursh 268
——parviflorum Nutt 268
——parviflorum Pers 269
——pinnatum Walt 258
Erythranthe Spach 463
Erythremia Nutt 565
Erythrochaete S. and Z 554
Erythronium Linn 150
Erythronium dens-canis var. G. Linn 150
Erythronium albidum Nutt 150
——*americanum* Sm 150
Erythronium lanceolatum Pursh 150
Erythrosana Schm 387
Erythroxyleae Baill 335
Erythroxyleae B. and H 335
Escalloniaceae Lindl 274
Eschenbachia Moench 525
Esdra Salisb 156
Esera Neck 272
Esmarckia Reich 223
Esopon Raf 565
Espeletiopsis Sch.-Bip 547
Esula Haw 341
Eucapnos S. and Z 253
Eucastanea (*sect.*) 190
Eucephalus Nutt 515
Eucentrus Presl 348
Eudorus Cass 553
Eudoxia G. Don 418
Euchiton Cass 529
Euchroma Nutt 470
——coccinea Nutt 471
——grandiflora Nutt 470
Euklastaxon Steud 47
Eumecanthus Kl. and G 341
Eunanus Benth 462
Euneadynamis Gesn 277
Eupatorium Linn 501
——*ageratoides* Linn. f 501
——*altissimum* Linn. *Spec.* 502
Eupatorium altissimum Linn. *Syst* 501
——dubium Poir 502
——falcatum Michx 502
——fraseri Poir 501
——fusco-rubrum Walt 502
——laevigatum Torr 502
——maculatum Linn 502
——odoratum Walt 501
Eupatorium perfoliatum Linn 501
——punctatum Willd 502
Eupatorium purpureum Linn 502
Eupatorium purpureum var. maculatum Darl 502
Eupatorium serotinum Michx 502
Eupatorium ternifolium Ell 502
——trifoliatum Linn 502
——verticillatum Muhl 502
Euphorbia Linn 341
Euphorbia androsaemifolium Presl 343
——arkansana Engelm. and Gray 342
Euphorbia corallata Linn 342
Euphorbia cyathophora Murr 342
——depressa Torr 343
Euphorbia dictyosperma F. and M 342
——*geyeri* Engelm 344
——*glyptosperma* Engelm 344
——*heterophylla* Linn 342
——*humistrata* Engelm 343
Euphorbia hypericifolia Hook 343
——hypericifolia Auct. Am 343
——hypericifolia var. communis Engelm 343
——leucoloma Raf 342
——maculata Linn. *Mant.* 343
Euphorbia maculata Linn. *Spec.* 343
——*marginata* Pursh 342
——*nutans* Lag 343
Euphorbia polygonifolia Hook 344
——preslii Guss 343
Euphorbia serpyllifolia Pers 344
Euphorbia thymifolia Pursh 343
——trinervis Bert 343
Euphorbiaceae 340
Euphorbiaceae Baill 344
Euphorbiastrum Kl. and G 341
Euphrosyne xanthiifolia Gray 533
Eurybia corymbosa Cass 524
——jussiei Cass 524
——macrophylla Cass 524

Eurybiopsis DC 525
Euryptera Nutt 390
Eurythalia Borkh 418
Eustylis Hook 391
Euthamia Nutt 508
——graminifolia Nutt 508
——occidentalis Nutt 508
Eutmon Raf 218
Eutoca R. Br 435
Eutriana Trin 70
——curtipendula Trin 71
——oligostachyum Kunth 72
Eutroximon Gray 563
Euxolus Raf 215
Evaiezoa pennsylvanica Raf 274
Evallaria Neck 154
——bifolia Neck 152
Evansia Salisb 160
Evonymoides scandens Moench 349
Evonymus Linn 348
——*atropurpureus* Jacq 348
Evonymus caroliniensis Marsh 348
——latifolius Marsh 348
Exarrhena R. Br 439
Exydra Endl 80

F

Faba Tourn 315
Fabaceae Lindl 308
Fagaceae 190
Fagara Linn 337
Fagus 190
Falcata Gmel 311
——*comosa* (Linn.) 311
Farfugium Lindl 554
Farobaea Schr 553
Faya Webb 178
Fedia Gaertn 492
——chenopodifolia Pursh 492
——fagopyrum T. and G 492
——radiata Michx 492
——radiata Torr 492
——triquetra H. and S 492
Fendleria Steud 57
Ferula Tourn 390
——nudicaulis Nutt 390
——villosa Walt 392
Ferulago Koch 390
Festuca Linn 82
Festuca airoides Lam 78
——arundinacea Lilj 79
——borealis M. K 80
——bromoides Michx 83
——cristata Vill 77
——donacina Wahl 80
——fluitans Linn 80
——nigra Gilib 83
——nutans Moench 85
Festuca nutans Willd 83
——*octoflora* Walt 83
Festuca ovina Linn 83
——tenella Willd 83
Festucaria Link 82
Ficaria Dill 241
Fimbrillaria Cass 525
Fimbristylis Vahl 102
——capillaris Gray 103
——melanostachya Brongn 101
Flammula DC 240
Fleurya canadensis B. and H. 197
Floerkea Spreng 494
Flourensia DC 539
Fluminia Fries 79
——arundinacea Fr 80
Fluvialis Mich 40
——flexilis Pers 40
Fonkia Phil 464
Forneum Adans 568
Forrestia Raf 355
Fragaria Linn 292
Fragaria elatior Eat 293
——grayana Vilm 293
——illinoensis Prince 293
——iowensis Prince 293
——palustris Cr 296
Fragaria vesca Linn 292
——*virginiana* var. *illinoensis* (Prince) 293
Fragariastrum Schur 293
Francoaceae Lindl 274
Frangula Moench 356
Franseria Cav 534
Fraxinus Linn 415
Fraxinus acuminata Lam 417
——alba Marsh 416
Fraxinus americana Linn 416
Fraxinus canadensis Gaertn. 417
——caroliniana Pursh 416
——concolor Muhl 416
——discolor Muhl 417
——epiptera Michx 417
——juglandifolia Willd 416
——nigra DuRoi 416
——nigra Marsh 416
——oblongocarpa Buckl 416
——pennsylvanica Marsh 416
Fraxinus pubescens Lam 416
——*sambucifolia* Lam 416
Fraxinus tomentosa Michx. f. 416
Fraxinus viridis Michx. f 416
Freiria Gaudich 199
Froelichia Moench 214
——*floridana* (Nutt.) 214
Fumana Dun 364
Fumanopsis Pomel 365
Fumaria aurea Michx 254
——cucullaria Linn 253
——flavula Raf 255
——pallida Salisb 253
——sempervirens Linn 255
Fumariaceae DC 252
Funastrum Fourn 423

G

Gaillardia Fouger 547
——*aristata* Pursh 548
Gaillardia bicolor Hook 548

Gaillardia bicolor var. aristata NUTT................. 548
——lanceolata DC.............. 548
——rustica CASS............. 548
Galardia LAM................. 547
Galarhoeus HAW............ 341
——corollatus HAW......... 342
Galatea CASS.................. 515
Galatella DC.................. 515
Galathenium NUTT.......... 560
——elongatum NUTT....... 562
——floridanum NUTT......561, 562
——ludovicianum NUTT.... 561
——sanguineum NUTT...... 562
Galbanophora NECK.......... 390
Gale SPACH.................. 178
Galega virginiana LINN....... 328
Galeopsis MOENCH........... 445
Galiaceae LINDL............. 478
Galilea PARLAT.............. 91
Galium LINN................. 479
——*aparine* LINN............ 482
——*asprellum* MICHX........ 480
Galium bermudianum MUHL. 481
Galium boreale LINN.......... 481
Galium brachiatum MUHL.... 482
——brachiatum PURSH..... 479
——circaeoides R. and S 482
Galium circaezans MICHX...... 482
Galium circaezans var. lanceolatum T. and G....... 482
——claytoni MICHX......... 480
Galium concinnum T. and G... 480
Galium cuspidatum MUHL.... 479
Galium lanceolatum TORR. 482
Galium micranthum PURSH.. 480
——obtusum BIGEL......... 481
——parviflorum RAF........ 480
——pennsylvanicum BART.. 479
——pensylvanicum MUHL... 480
——rubioides AUCT. AM 481
——septentrionale R. and S. 481
——spinulosum RAF........ 480
——strictum TORR.......... 481
——suaveolens WAHL....... 479
——tinctorium LINN....... 480
——torreyi BIGEL.......... 482
Galium trifidum LINN.......... 480
——*trifidum* var. *latifolium* TORR.................. 481
Galium trifidum var. obtusum (BIGEL.)................ 481
Galium triflorum MICHX....... 479
Galorida REUSCH............ 548
Galurus SPRENG............. 341
Gamochaeta WEDD........... 529
Gampsoceras STEV........... 241
Gandriloa STEUD............ 211
Garryaceae ENDL 399
Gastroglottis BLUME......... 173
Gatesia BERTOL............. 328
Gatyona CASS................ 567
Gaultheria serpyllifolia SALISB 407
Gaura LINN.................. 376
Gaura biennis LINN........... 376
——*coccinea* NUTT........... 376
Gaura glabra LEHM.......... 376
——marginata LEHM........ 376
Gauridium SPACH 376
Gaytania MUNST............. 394
Genersichia HEUFFL.......... 105
Gennaria Parlat............. 165
Gentiana LINN................ 418
Gentiana alba AUCT.......... 419
——amarelloides PURSH 420
Gentiana americana (LINN.) ... 420
——*andrewsii* GRISEB........ 419
Gentiana andrewsii var. linearis HOOK................. 419
——barbata FROEL.......... 420
——brachypetala BUNGE ... 420
——catesbaei WALT 419
——ciliata americana LINN. 421
——crinita FROEL 421
——detonsa ROTTB......... 420
——elliottii var. (?) latifolia CHAP. 419
——fimbriata ANDR 421
Gentiana flavida GRAY........ 419
Gentiana linearis var. lanceolata GRAY.............. 419
Gentiana linearis var. *rubricaulis* (SCHWEIN.) 419
Gentiana pneumonanthe AUCT. AM.................. 419
Gentiana puberula MICHX..... 420
Gentiana quinqueflora HOOK. 420
——quinqueflora LAM 420
——quinqueflora var. occidentalis GRAY......... 420
Gentiana quinquefolia var. *occidentalis* (GRAY)........... 420
Gentiana rubricaulis SCHWEIN 419
Gentiana saponaria LINN...... 419
Gentiana saponaria var. linearis GRAY............... 419
——saponaria var. puberula GRAY.................. 420
Gentiana serrata GUNN........ 420
Gentianaceae............... 417
Gentianella BORKH........... 418
——crinita DON............ 421
Georchis LINDL.............. 171
Geracium REICH............. 567
Geraniaceae................ 322
Geraniaceae BAILL. 334, 354
Geraniaceae B. and H......334, 354
Geranium LINN.............. 333
Geranium atrum MOENCH 333
Geranium carolinianum LINN.. 333
Geranium lanuginosum JACQ 333
Geranium maculatum LINN.... 333
Gerardia LINN............... 468
——*aspera* DOUGL.......... 469
——*auriculata* MICHX....... 468
Gerardia erecta WALT........ 469
——flava.................. 468
Gerardia glauca SPRENG 468

Gerardia grandiflora Benth... 468
Gerardia longfolia Benth.... 469
——maritima var. major Chap.................. 469
Gerardia pedicularia Linn..... 468
——*purpurea* Linn.......... 469
Gerardia purpurea Linn...... 469
——quercifolia Pursh...... 468
Gerardia tenuifolia Vahl...... 469
——*tenuifolia var. asperula* Gray................ 470
Gerardia virginica (Linn.)..... 468
Geryonia Schur.............. 274
Gesnouinia Gaudich......... 199
Geum Linn.................. 299
——*album* Gmel............. 301
Geum canadense Jacq........ 301
——canadense Murr......... 300
——carolinianum Walt..... 301
——heterophyllum Desf.... 301
——hirsutum Muhl......... 301
Geum japonicum Thunb....... 301
Geum macrophyllum Willd.. 301
——ranunculoides Ser...... 300
Geum rivale Linn............ 300
——*strictum* Ait............ 300
Geum strictum var. B Hook.. 301
Geum virginianum Linn....... 301
Geum virginianum Murr..... 301
Gilia linearis Gray.......... 433
Gingidium Forst. 391
Girtanneria alnifolia Raf. ... 356
——franguloides Raf........ 356
Glandularia Gmel........... 442
Glomeraria Cov.............. 214
Glossula Raf................. 201
Glumosia Herb.............. 161
Glyceria R. Br................ 80
——aquatica Hook.......... 81
——arundinacea Fr......... 80
——arundinacea Kunth.... 81
——canadensis Trin........ 82
——elongata Trin.......... 82
——fluitans R. Br.......... 80
——grandis Wats........... 81
——michauxii Kunth...... 81
——nervata Trin........... 81
Glycine anguluosa Muhl..... 312
——apios Linn.............. 315
——comosa Linn............ 311
——monoica Linn.......... 311
——sarmentosa Roth....... 311
Glycosma Nutt.............. 398
Glycyphylla hispidula Raf.... 407
Glycyrrhiza Linn............. 322
Glycyrrhiza glabra Torr...... 322
Glycyrrhiza lepidota (Nutt.)... 322
Glycyrrhizopsis Boiss......... 322
Glyphospermum G. Don....... 418
Gnaphalium Linn............. 529
Gnaphalium conoideum Lam.. 530
Gnaphalium decurrens Ives.... 530
Gnaphalium diocum var. plantaginifolium Michx.. 528
Gnaphalium margaritacea Linn 529
Gnaphalium obtusifolium Linn. 530
Gnaphalium plantagineum Murr................ 528
——plantaginifolium Linn. 528
——polycephalum Michx... 530
Gnaphalium uliginosum Linn.. 530
Gnaphalopsis DC............. 548
Godetia Spach............... 380
Godinella Lest............... 412
Gomphocarpus R. Br......... 423
Gomphopetalum Turcz 391
Gomphrena floridana Spreng. 214
Gongylocarpus Cham. and Schlecht............ 376
Gonogona Link............. 171
Goodenieae Baill........... 494
Goodyera R. Br............ 171
——pubescens R. Br........ 171
——repens R. Br........... 172
Graemia Hook............... 547
Gramineae.................. 47
Grammica Lour............. 429
Grammatotheca Presl....... 497
Grammerium Desvx 49
Grantia Griff................ 134
——*brasiliensis* (Wedd.)..... 134
——*columbiana* (Karst.).... 135
Graphephorum arundinaceum Asch................. 80
——festucaceum Gray...... 80
Graphiosa Alef.............. 313
Gratiola Linn. 464
Gratiola anagallidea Michx.. 464
——attenuata Spreng...... 464
——caroliniensis Pers...... 464
——dilata Muhl........... 464
——missouriensis Beck..... 464
——neglecta Torr.......... 464
——officinalis Michx....... 464
——tetragona Ell.......... 464
Gratiola virginiana Linn...... 464
Grimaldia Schr.............. 309
Grindelia Willd.............. 506
Grindelia arguta Gray....... 506
Grindelia squarrosa (Pursh)... 506
Grindelia subdecurrens DC... 506
Groenlandica J. Gay.......... 33
Grossularia Tourn........... 278
——cynobasti Spach........ 280
——hirtella Spach.......... 280
——oxycanthoides Spach... 280
Grossulariaceae Lindl....... 274
Grubbieae................... 199
Guaco Liebm................ 201
Guettardia Man............. 440
Guilandina Linn............ 309
——dioica Linn............ 310
Gunneraceae Endl.......... 383
Guntheria Spreng........... 548
Gusmania Remy............. 525
Gussonea Pr................. 103
Gymnadenia R. Br.......... 165
——hyberborea Link........ 167

Gymnadenia tridentata LINDL. 169
Gymnalypha GRIS 341
Gymnanthelia ANDERS 47
Gymnanthemum CASS 499
Gymnocaulis NUTT 475
Gymnocladus LAM 309
Gymnocladus canadensis LAM. 310
Gymnocladus dioicus (LINN.) 310
Gymnoleima DECN 437
Gymnosciadium HOCHST 394
Gymnospermium SPACH 250
Gymnosporia W. and A 348
Gymnostichum SCHREB 89
——hystrix SCHREB 89
Gynandriris PARLAT 160
Gynoxys DC 554
Gynura CASS 554
Gyptis CASS 501
Gyromia NUTT 155
——virginica NUTT 155
Gyrostachys PERS 170
——*cernua* (LINN.) 170
——*gracilis* (BIGEL.) 170
——*romanzowiana* (CHAM.) 171

H

Habenaria WILLD 165
——*bracteata* (WILLD.) 168
——*dilatata* (PURSH) 167
Habenaria fimbriata R. BR 166
——fissa TORR 166
Habenaria flava (LINN.) 168
Habenaria fuscescens TORR 168
——grandiflora TORR 166
——herbiola R. BR 168
Habenaria hookeriana TORR 167
——*hyperborea* R. BR 167
Habenaria incisa TORR 166
Habenaria lacera (MICHX.) 166
——*leucophaea* (NUTT.) 166
Habenaria orbiculata GOLDIE. 167
——*psycodes* (LINN.) 166
Habenaria psycodes TORR 166
——racemosa RAF 166
——spectabilis SPRENG 165
Habenaria tridentata (WILLD.) 168
Habenaria virescens SPRENG. 168
——viridis var. bracteata REICH 168
Haenkea R. and P 348
Hahnia MED 283
Halimium DUN 364
Hallia hirta Poir 317
——juncea Poir 318
Halmia ROEM 287
——flabellata ROEM 288
——lobata ROEM 289
——tomentosa ROEM 289
——tomentosa var. calpodendron ROEM 289
——tomentosa var. leucophaea ROEM 289
——tomentosa var. pyrifolia ROEM 289
Halorageae B. and H 344
Halorrhagidaceæ 383
Halorrhagidaceae BAILL 375
Haloschoenus NEES 104
Halothamnus J. and S 213
Hamatris SALISB 160
Hamiltonia SPRENG 200
——sarmentosa SPRENG 200
——umbellata SPRENG 200
Hammatocaulis TAUSCH 360
Haplopappus CASS 514
——*spinulosus* (PURSH.) 514
Haplostellis ENDL 169
Haplostemum RAF 96
Haplostephium DON 567
Haplosticha PHILIP 554
Haplostylis NEES 104
Harpachne HOCHST 74
Harpalium CASS 539
——rigidum CASS 542
Harpalyce DON 565
Hartmannia SPACH 380
Haynaldia KAN 497
Haynaldia SCHUR 85
Hebe JUSS 465
Hebeclinium DC 501
Hebelia GMEL 143
Hecatonia DC 241
Hectorea DC 507
Hedeoma PERS 451
Hedeoma hirta NUTT 451
Hedeoma hispida PURSH 451
Hedera quinquefolia LINN 357
Hederaceae SEEM 385
Hedraianthera F. MULL 348
Hedyotis ciliolata TORR 478
——longifolia HOOK 478
Hedysarum acuminatum MICHX 321
——aikinii EAT 321
——canadense LINN 319
——canescens LINN 320
——frutescens LINN 318
——frutescens WILLD 317
——glutinosum WILLD 321
——grandiflorum WALT 321
——hirtum LINN 317
——junceum WALT 318
——lespedeza POIR 319
——marylandicum WILLD 320
——nudiflorum LINN 321
——paniculatum LINN 320
——prostratum MUHL 319
——repens LINN 319
——reticulatum MUHL 318
——scaberrimum ELL 320
——scabrum MOENCH 319
——umbellatum WALT 317
——violaceum LINN 318
——viridiflorum WILLD 320
Heeria MEISSN 345
Heineckenia WEBB 331
Helanthium ENGLM 43
Helenium LINN 547
Helenium altissimum LINK 547
Helenium autumnale LINN 547

Helenium canaliculatum Lam. 547
——commutatum Link 547
——grandiflora Nutt. 547
——longifolium Sm. 547
——montanum Nutt. 547
——pubescens Ait. 547
——pumilum Willd. 547
——tubiflorum DC. 547
Heleocharis R. Br. 99
——*acicularis* (Linn.) 100
——*acuminata* Muhl. 101
Heleocharis compressa Sulliv. 101
Heleocharis intermedia (Muhl.) 100
——*ovata* (Roth.) 102
——*palustris* (Linn.) 101
——*palustris* var. *glaucescens* (Willd.) 102
——*tenuis* (Willd.) 100
——*wolfii* Gray 99
Heleogiton glaucum Reich. 98
——pungens Reich. 99
Heleophylax Lestib. 97
Heliamphora Benth. 271
Helianthemum Pers. 364
Helianthemum canadense Michx. 365
——corymbosum Pursh. 365
Helianthemum majus (Linn.) 365
Helianthemum ramuliflorum Michx. 365
——rosmarinifolium Pursh. 365
Helianthus Linn. 539
Helianthus altissimus Linn. 541
Helianthus annuus Linn. 543
Helianthus atrorubens Lam. 542
——atrorubens Michx. 542
——crassifolius Nutt. 542
Helianthus decapetalus Linn. 540
Helianthus diffusus Sims 542
Helianthus divaricatus Linn. 541
Helianthus diversifolius Ell. 540
——doronicoides T. and G. 539
——frondosus Linn. 540
Helianthus gigantea Linn. 541
Helianthus gigas Michx. 541
Helianthus grosse-serratus Mart. 541
——*hirsutus* Raf. 540
Helianthus hispidulus Ell. 540
——integrifolius Nutt. 542
Helianthus laetiflorus Pers. 542
Helianthus laevis Linn. 545
——laevis Walt. 540
——lenticularis Dougl. 543
——macrocarpus DC. 543
Helianthus maxmiliani Schrad. 541
Helianthus maxmiliani var. asperrimus Gray 541
——missouriensis Nutt. 542
——missuricus Spreng. 543
——multiflorus Hook. 543
——ovatus Lehm. 543
——patens Lehm. 542
Helianthus petiolaris Nutt. 542
Helianthus prostratus Willd. 540
Helianthus rigidus (Cass.) 542
Helianthus scaberrimus Ell. 542
Helianthus strumosus Linn. 540
Helianthus strumosus Willd. 540
——tenuifolius Ell. 540
Helianthus tracheliifolius Willd. 540
Helianthus truncatus Schwein. 541
——tubaeformis Nutt. 543
Helianthus tuberosus Linn. 539
——*tuberosus* var. *subcanescens* Gray 540
Helianthus tuberosus Parry. 541
Heliastrum DC 515
——album DC. 516
Helicotrichum Bess. 68
Helichroa Raf. 537
Heliophthalmum Raf. 537
Heliopsis Pers. 536
Heliopsis laevis var. scabra T. and G. 536
Heliopsis scabra Dun. 536
Heliosperma Reich. 219
Helleborine Martyn 175
——corallorhiza Schm. 174
——tuberosus OK. 175
Helleborus trifolius Linn. 231
Helleria Fourn. 82
Hellmuthia Steud. 97
Helmia Kunth 160
Helminthosporium Torr. 435
Helonias virginica Sims 145
——viridis Sims 145
Helwingiaceae Endl. 385
Helxine Req. 199
Hemiambrosia Delp. 534
Hemicarpha Nees 89
——*micrantha* (Vahl.) 90
Hemicarpha subsquarrosa Mart. 90
Hemixanthidium Delp. 534
Hepatica Dill. 235
——acuta Britt. 236
——acutiloba DC. 236
——americana Ker. 235
——hepatica Britt. 235
——triloba Chaix 235
——triloba var. acuta Pursh 236
——triloba var. americana DC. 235
Heptas Meissn. 473
Heracleum Linn. 389
Heracleum auritum Bisch. 389
Heracleum lanatum Michx. 389
Heracleum panaces Spreng. 389
——spondylium Nutt. 389
Herbichia Zawadsk. 553
Heriteria Schr. 143
Hermodactylon Parlat. 160
Herpestis Gaertn. 473
——callitrichoides HBK. 464
——rotundifolia Pursh 473
Herpetica Rumph. 309
Hersilea Kl. 515

Hesperis pinnatifida Michx.. 256
Heterachaena Zoll 394
Heterachthia Kunze 136
Heteranthelium Hochst 85
Heteranthera R. and P 138
——*dubia* (Jacq.) 138
Heteranthera graminea Vahl 138
Heterocaryum A. DC 440
Heterochaeta DC 515, 525
Heterochloa Desvx 47
Heterocodon Nutt 494
Heterodonta Nutt 543
Heterodraba Greene 263
Heterogaura Roth 376
Heterolaena Sch.-Bip 501
Heteromeris Spach 364
Heteropleura Sch.-Bip 568
Heteropogon Pers 47
Heteroseris Boiss 567
Heterosteca Desvx 70
Heterostemum Nutt 381
Heterotropa Morr and Decne 201
Heteryta Raf 435
Heuchera Linn 275
——*americana* Linn 276
Heuchera cortusa Michx 276
——foliosa Raf 276
Heuchera hispida Pursh 275
Heuchera lucida Schlecht 275
——reniformis Raf 276
——richardsonii R. Br 275
——scapigera Moench 276
——viscida Pursh 276
Heuffelia Schur 68
Hexameria T. and G 493
Hexonychia Salisb 147
Heyfeldera Sch.-Bip 507
Hibiscus Linn 361
Hibiscus hastatus Michx 361
——laevis Scop 361
Hibiscus militaris Cav 361
Hibiscus riparius Pers 361
——virginicus Walt 361
Hicoria Raf 177
——amara Raf 178
——minima Britt 178
——ovata Britt 178
Hieracium Linn 568
Hieracium auratum Fr 569
——barbatum Nutt 568
Hieracium canadense Michx 569
Hieracium corymbosum Fr 569
——fasciculatum Pursh 569
——gronovii Linn 569
——helianthiifolium Froel 569
——kalmii Spreng 569
Hieracium longipilum Torr 568
Hieracium macrophyllum Pursh 569
——prenanthoides Hook 569
——runcinatum James 568
——scabriusculum Schwein 569
——subnudum Froel 569
Hieracium venosum Linn 569
Hieracium virgatum Pursh 569
Hierochloe Gmel 55
Hierochloa borealis Auct 55
——fragrans R. and S 55
——odorata Auct 55
Hierochloe odorata var fragrans (Willd.) 55
Himantoglossum Spreng 164
Hippion Schm 418
Hippomane Agh 340
Hippophae argentea Pursh 373
Hippuris Linn 383
Hippuris polyphylla Raf 383
Hippuris vulgaris Linn 383
Hirculus Haw 274
Hisutsua DC 515
Hocquartia Dum 201
Holargidum Turcz 263
Holcus R. Br 47
——fragrans Willd 55
Hololepis DC 499
Holoschoenus Link 97
Holosetum Steud 49
Holostigma G. Don 497
Holostigma Spach 381
Holostylis Duchartre 201
Homalocarpus Schur 235
Homalocenchrus Mieg 53
——*oryzoides* (Linn.) 54
——*virginicus* (Willd.) 54
Homoeatherum Nees 47
Homolobus Nutt 323
Homopappus Nutt 514
Homostylium Nees 515
Hoorebekia Cornel 514
Hoplotheca Spreng 214
Hoppea Reich 554
Hordeum Linn 86
——*jubatum* Linn 87
Hordeum murinum var. B. Linn 87
Hordeum nodosum Linn 87
Hordeum pratense Huds 87
——pratense var. nodosum Led 87
——pusillum Nutt 87
——secalinum Schreb 87
Horkelia Cham. and Schlecht 293
Horkelia Reich 134
Hosackia Dougl 331
——pilosa Nutt 332
——purshiana Benth 332
——unifoliolata Hook 332
Hostia Moench 567
Houstonia Linn 478
Houstonia angustifolia Pursh 478
——ciliolata Torr 478
——longifolia Gaertn 478
Houstonia purpurea var. *ciliolata* (Torr.) 478
——*purpurea* var. *longifolia* (Gaertn.) 478
Howardia Klotzsch 201
Hubertia Bong 553

Hudsonia LINN.................. 365

Hudsonia ericoides RICH...... 365

Hudsonia tomentosa NUTT..... 365

Hugueninia REICH........... 257

Hulthemia DUM............. 302

Humulus LINN................ 196

Humulus americanus NUTT... 196

Humulus lupulus LINN........ 196

Hydastylus SALISB........... 161

Hydatica NECK.............. 274

Hydrangeaceae LINDL........ 274

Hydrastis LINN............... 230

——*canadensis* LINN.... 230

Hydrocera BLUME........... 343

Hydroceratophyllum VAILL.. 229

Hydrocharitaceae.. 45

Hydrochloa HARTM.......... 80

——fluitans HOST........... 80

Hydropeltis L. C. RICH....... 226

——purpurea MICHX........ 226

Hydrophyllaceae........... 434

Hydrophyllaceae BAILL....... 436

Hydrophyllum LINN........... 434

——*appendiculatum* MICHX... 435

Hydrophyllum trilobum RAF. 435

Hydrophyllum virginianum LINN................. 435

Hydrophyllum virginicum AUCT................ 435

Hydropyrum LINK........... 53

——esculentum LINK....... 53

Hydroschoenus ZOLL. et MORR 91

Hylas BIGEL................. 384

Hylogeton SALISB............ 147

Hymenachne BEAUV......... 49

Hymenatherum CASS......... 548

Hymenocalyx ZENK.......... 361

Hymenochaeta BEAUV........ 97

Hymenochaeta NEES.. 97

Hymenochloa T. and G........ 534

Hymenolytrum NEES......... 105

Hyoseris amplexicaulis MICHX 564

——biflora WALT.......... 564

——prenanthoides WILLD... 564

Hyparrhenia ANDERS......... 47

Hypecusa ALEF.............. 315

Hyperanthera dioica VAHL... 310

Hypericaceae............... 362

Hypericum SPACH........... 362

Hypericum LINN............. 362

Hypericum amplexicaule LAM. 363

——ascyroides WILLD....... 363

Hypericum ascyron LINN....... 363

Hypericum campanulatum WALT. 364

Hypericum canadense LINN.... 362

Hypericum emarginatum LAM 364

——foliosum JACQ.......... 362

Hypericum gymnanthum ENGELM and GRAY....... 362

Hypericum macrocarpum MICHX............... 363

Hypericum maculatum WALT... 363

Hypericum micranthum CHOIS 363

Hypericum moranense HBK.. 362

Hypericum mutilum LINN...... 363

Hypericum mutilum var. gymnanthum GRAY....... 363

—— parviflorum WILLD..... 363

—— pauciflorum HBK 362

Hypericum prolificum LINN.... 363

Hypericum punctatum LAM.. 363

——pyramidatum AIT....... 363

——quinquenervium WALT. 363

——stellarioides HBK.. 363

——thesiifolium HBK....... 362

——virginianum WALT..... 363

Hypericum virginicum LINN.... 364

Hypogynium NEES........... 47

Hypopitys SCOP.......... 405

Hypoporum NEES............. 105

——verticillatum NEES..... 105

Hypoxis LINN................. 159

Hypoxis carolinensis MICHX.. 159

Hypoxis erecta LINN........... 159

Hyssopus anisatus NUTT...... 449

—— discolor DESF........... 449

——nepetoides LINN........ 450

——scrophulariaefolius WILLD................ 449

Hysterionica BAILL....506, 507, 514

Hysterophorus VAILL......... 533

Hystrix MOENCH.............. 89

——*hystrix* (LINN.).......... 89

Hystrix patula MOENCH. 89

I

Ibidium SALISB.............. 170

Ictodes BIGEL................ 131

——foetidus BIGEL.... 131

Idianthes DESVX 567

Ilex LINN................ 349

——*verticillata* (LINN.)....... 350

Ilicineae ENDL............... 349

Illecebraceae 219

Ilysanthes RAF............... 464

——*gratioloides* (LINN)...... 464

Ilysanthes riparia RAF....... 464

Impatiens LINN.............. 354

——*aurea* MUHL........... 355

——*biflora* WALT.......... 354

Impatiens fulva NUTT....... 354

——maculata MUHL........ 354

——nolitangere MICHX..... 355

——nolitangere var. B. MICHX 354

——pallida NUTT........... 355

Imperatoria TOURN.......... 390

——lucida NUTT........... 392

Intybellia CASS............... 567

Intybellia MONN. 567

Intybus FR.................. 567

Iodanthus hesperioides T. and G.... 256

Iodopappus SCH.-BIP......... 499

Ioniris KLATT............... 160

Ipomea LINN.................. 427

Ipomea nyctalea LINN........ 434

Iria RICH.................. 102

Iria capillaris (Linn.) 103
Iridaceae 160
Iridium Heer 161
Iris Linn 160
Iris hexagona Walt 161
Iris versicolor Linn 161
Iris virginica Pursh 161
Isanthus Michx 456
——*brachiatus* (Linn.) 456
Isanthus caeruleus Michx 456
Ischaemon Schmied 142
Isidrogalva R. and P 143
Isnardia Linn 375
——*palustris*, Linn 375
Isnardia palustris var. americana DC 375
Isnardia polycarpa (Short and Peter) 375
Isolepis R. Br 97
——acicularis Schlecht 100
——capillaris R. and S 103
——lineata R. and S 96
——micrantha Vahl 90
Isolobus A. DC 497
Isolobus Spach 338
Isonema Cass 499
Isopappus T. and G 514
Isopyrum Linn 231
——*biternatum* (Raf.) 231
Isopyrum thalictroides Spach 231
Isopyrum trifolium (Linn.) 231
Isotria Raf 169
Ittnera Gmel 40
Iva Baill 533
——monophylla Walt 534
——xanthiifolia Nutt 533
Ivesia Torr 293
Ixeris Cass 560
Ixodia Soland 226

J

Jacksonia Raf 270
——*dodecandra* (Michx.) 270
Jacksonia trifoliata Raf 270
Jacoebaea Thunb 553
Jalapa Moench 216
Janthe Salisb 159
Jarava R. and P 57
Jasmineae Endl 415
Jocaste Kunth 152
Joachimea Ten 72
Juchia Neck 497
Juglandaceae 176
Juglandiphyllum Font 176
Juglans Linn 176
Juglans alba Michx 178
——alba minima Marsh 178
——amara Michx 178
——angustifoiia Lam 178
——cathartica Michx 177
Juglans cinerea Linn 177
Juglans compressa Gaertn 178
Juglans nigra Linn 177
Juglans nigra oblonga Marsh 177
Juglans oblonga Mill 177
——ovata Mill 178
——squamosa Lam 178
Julus Salisb 147
Juncaceae 138
Juncagineae 41
Juncagineae (*Tribus*) 33
Juncago Tourn 41
——palustris Moench 41
Juncastrum Heist 142
Juncodes Adans 142
Juncus Linn 138
Juncus acuminatus Auct. Am 141
——acuminatus Michx 142
Juncus acuminatus var. *legitimus* Engelm 142
Juncus aemulans Lieb 140
——arcticus Lap 140
——aristatus Link 139
Juncus balticus var. *littoralis* Engelm 140
Juncus bicornis Michx 139
——bogotensis HBK 140
——campestris var G. Linn 140
Juncus canadensis J. Gay, var. *coarctatus* Engelm 141
——*canadensis* var. *longecaudatus* Engelm 142
Juncus chloroticus Schultes 139
——communis var. effusus E. Mey 140
——compressus *x* effusus OK 139
——conglomeratus Linn 140
——debilis Gray 142
Juncus effusus Linn 140
Juncus erectus Pers 143
Juncus filiformis Linn 140
Juncus fraternus Kunth 142
——germanorum Steud 139
——gesneri Sm 139
——gracilis Sm 139
——intermedius Thuill 143
——laevis var effusus Wallr 140
——lucidus Hochst 139
——macer S. F. Gray 139
——megacephalus Wood 141
——multiflorus Ehrh 143
——nemorosus Host 143
——nodosus Auct 141
Juncus nodosus var. *genuinus* Engelm 141
——*nodosus* var. *megacephalus* Torr 141
Juncus pallescens E. Mey 142
——paradoxus Auct. Amer 141, 142
——paradoxus E. Mey 142
——parviflorus Poir 139
——polycephalus var. paradoxus Torr 142
——pondii Wood 142
——rostkovii E. Mey 141
——smithii Kunth 139
Juncus tenuis Willd 139

Juncus transylvanicus Schur. 140
——trichodes Steud 140
——vacillans Steud 139
Juncus vaseyi Engelm 139
Juno Tratt 161
Jussiea Linn 375

K

Kallias Cass 536
Kampmannia Raf 337
Kanahia R. Br 423
Kardanoglyphos Schl 261
Kentrophyta Nutt 323
Kerakosmion bulbiferum Raf. 395
Keraselma Neck 341
Kerneria Moench 545
Kerstenia Neck 501
Ketmia Tourn 361
Kiesera Reinw 327
Kingstonia Gray 274
Kleinia Haw 554
Kneiffia Spach 380
——chrysantha Spach 382
——pusilla Spach 382
Knowlesia Hassk 136
Koeleria Pers 77
Koeleria arenaria Dum. 77
Koeleria cristata (Linn.) ....
Koeleria nitida Nutt 77
——parviflora Bert 77
——(?) pennsylvanica DC 76
——truncata Torr 76
Koellia Moench 452
Koellia capitata Moench 452
Koellia flexuosa (Walt.) 452
——*virginiana* (Linn.) 452
Krapfia DC 241
Krascheninikowia Turcz 221
Krebsia Harv 423
Krigia Schreb 564
——amplexicaulis Nutt 564
Kuhnia Linn 503
Kuhnia critonia Willd 503
——elliptica Raf 503
Kuhnia eupatorioides Linn. f 503
Kuhnia eupatorioides var. corymbulosa Torr and Gray 503
Kuhnia eupatorioides var. *glutinosa* (Ell.) 503
Kuhnia glutinosa DC 502
——glutinosa Ell 503
——pubescens Raf 503
——suaveolens Fres 503
(Kuhnia) Walt 328
Kuhnistera Lam 328
——*candida* (Willd.) 328
——*purpurea* (Vent.) 329
——*villosa* (Nutt.) 328

L

Labiatae 444
Lacaris Ham 337
Lachanodes DC 554
Lachnagrostis Trin 66
Lachnophyllum Bunge 525
Lachnorhiza A. Rich 500
Laciniaria Hill 504
——*cylindracea* (Michx.) 505
——*cylindracea* forma *solitaria* (MacM.) 506
——*punctata* (Hook.) 505
——*pycnostachya* (Michx.) 504
——*scariosa* (Linn.) 504
——*spicata* (Linn.) 504
——*squarrosa* (Linn.) 506
——*squarrosa* var. *intermedia* (Lindl.) 506
Lactuca Baill 565
Lactuca Linn 560
Lactuca canadensis Gray 562
Lactuca canadensis Linn 562
Lactuca caroliniana Walt 562
——elongata Muhl 562
——elongata var. albiflora T. and G 562
——elongata var. sanguinea T. and G 562
Lactuca floridana (Linn.) 561
——*hirsuta* Muhl 562
Lactuca integrifolia Nutt 561
——leucophaea Gray 560
——longifolia Mich 562
Lactuca ludoviciana (Nutt.) 561
——*pulchella* (Pursh) 561
Lactuca sagittaefolia Ell 562
——sanguinea Bigel 562
Lactuca spicata (Lam.) 560
Lactucopsis Sch.-Bip 560
Laennecia Cass 525
Lagarosiphon Harv 46
Lagoseris Link 567
Lagunaea Cav 361
Lagunaria Don 361
Lagunea Lour 204
Lamia Vand 219
Lamiaceae Lindl 444
Lamprocarpites 42
Lamyra Cass 558
Langsdorfia Leandr 337
Lapathum Moench 202
Laportea Gaudich 197
——*canadensis* (Linn.) 197
Lappula Hall 440
——*deflexa* (Wahl.) 440
——*redowskii* var. *pilosum* (Nutt.) 441
——*virginiana* (Linn.) 440
Larbraea St. Hil 221
Lasiagrostis Link 57
Lasierpa Torr 407
Lasiolepis Boeckl 136
Lasiopus Don 562
Lastila Alef 313
Lathyrus Linn 313
Lathyrus albidus Eat 314
——decaphyllus Hook 314
Lathyrus glaucifolius Beck 314

Lathyrus lanszwertii Kell 313
——myrtifolius Muhl 314
——ochroleucus Hook 314
Lathyrus palustris Linn 313
——*palustris* var. *myrtifolius* (Muhl.) 313
Lathyrus pisiformis Rich 314
——polymorphus Gray 313
——polyphyllus Wats 314
——pubescens Port 314
——stipulaceus Torr 314
Lathyrus venosus Muhl 314
Lathyrus venosus var. D. T. and G 314
Lavauxia Spach 380
Laxmannia F. and M 299
Lazarolus Med 283
Leachia Cass 543
Lebetina Cass 548
Lechea major Linn 365
Lechioides Dun 364
Ledebouria Link 394
Ledum Linn 405
Ledum groenlandicum Retz 406
Ledum latifolium Ait 406
Ledum palustre var. latifolium Michx 406
Leersia Swartz 53
——oryzoides Sw 54
——virginica Willd 54
Legouzia Dur 496
Leguminosae 308
Lehmannia Tratt 293
Leiboldia Schlecht 499
Leimanthium Willd 145
——hybridum Hook 145
Leimanthium virginicum Willd 145
Leiolobium Reich 259
Lemna Linn 133
Lemna bannatica Kunth 134
——cruciata Roxb 133
——cyclostasa Ell 133
——intermedia Ruthe 133
——major C. A. Mey 134
——minima Humb 133
Lemna minor Linn 133
Lemna orbicularis Kit 134
——orbiculata Roxb 134
Lemna perpusilla Torr 133
——*polyrhiza* Linn 134
Lemna thermalis Beauv 134
Lemna trisulca Linn 133
Lemna vulgaris var B. Lam 133
Lemnaceae 132
Lentibularia Vaill 473
Lentibulariaceae 473
Lenticula minor Scop 133
——polyrhiza Lam 134
——trisulca Scop 133
Leontice Linn 250
——*thalictroides* Linn 250
Leontodon Adans 562
——taraxacum Linn 563
Leontodon Baill 564
Leontopetalum Tourn 250
Lepachys Raf 537
——angustifolia Raf 537
——columnaris T. and G 537
——pinnata T. and G 537
Lepachys pinnatifida Raf 537
Lepeocercis Trin 47
Lepia Desvx 256
Lepicaune Lap 567
Lepidanche Engelm 429
——compositarum Engelm. 429
Lepidium Linn 256
——*intermedium* Gray 257
Lepidium ruderale Rich 257
Lepidium virginicum Linn 256
Lepidoploa Cass 499
Lepidostemon Leme 461
Leptandra Nutt 465
——purpurea Raf 467
——virginica Nutt 467
Leptanthus Michx 138
——gramineus Michx 138
Leptapoda Nutt 547
Leptargyraia Raf 373
——*argentea* (Nutt.) 373
Leptasea Haw 274
Leptocarpaea DC 257
Leptopus Kl. and G 341
Leptopyrum Reich 231
Leptorchis Thou 173
——*liliifolia* Linn 174
——*loeselii* (Linn.) 173
Leptoschoenus Nees 103
Leptostachya Mitch 442
Leptostachya carolinensis OK. 442
Leptostachya leptostachya (Linn.) 442
Leptostelma Don 525
Leptosyne DC 543
Lepturus paniculatus Nutt 70
Lerchenfeldia Schur 67
Lereschia Boiss 394
Lerouxia Merat 412
Lespedeza Michx 317
Lespedeza angustifolia Hook. 318
——capitata Michx 317
——divergens Pursh 318
——frutescens DC 318
Lespedeza frutescens (Willd.) 317
Lespedeza fruticosa Pers 317
Lespedeza hirta (Linn.) 317
——*leptostachya* Engelm 317
Lespedeza polystachya Michx. 317
——procumbens Michx 319
——prostrata Pursh 319
Lespedeza repens (Linn.) 319
——*reticulata* (Muhl.) 318
——*reticulata* var. *virginica* (Linn.) 318
Lespedeza reticulata Wats. and Coult 318
——sessiliflora Michx 318
——stuvei var. intermedia S. Wats 318

Lespedeza violacea (Linn.)..... 318
Lespedeza violacea var. augustifolia Max.......... 318
——violacea var. sessiliflora
Lesquerella S. Wats.......... 263
——*argentea* (Pursh)........ 263
Lesquerella ludoviciana Wats. 263
Lessonia Bert.............. 388
Leucocarpon A. Rich........ 348
Leucocephala Roxb......... 136
Leucodermis Planch......... 350
Leucoglochin Heuffl........ 105
Leuchoglochin pauciflorus Heuff.............. 130
Leuconymphaea Ludw......... 227
——*ordorata* (Dryand.)..... 228
——*reniformis* (DC.)........ 227
Leucophoba Ehrh............ 142
Leucopoa Griseb............ 78
Leucorchis E. Mey 165
Leucosceptrum Sm........... 455
Leucostachys Hoffm......... 171
Leucostemma Benth......... 221
Levisticum Koch............ 391
Liatris Schreb.............. 504
——aspera Michx......... 504
——borealis Nutt.......... 504
——brachystachya Nutt... 504
——cylindracea Michx...... 505
——cylindracea Torr....... 505
——graminifolia Willd.... 505
——intermedia Lindl....... 506
——macrostachya Michx... 504
——punctata Hook......... 505
——pycnostachya Michx.... 504
——resinosa DC............ 505
——resinosa Nutt.......... 504
——scariosa Willd......... 504
——sessiliflora Bertol..... 504
——sphaeroidea Michx..... 504
——spicata Willd.......... 504
——squarrosa Hook........ 505
——squarrosa Willd....... 506
——squarrosa var. intermedia DC.............. 506
Libertia Lej................ 84
Ligularia Cass.............. 554
Ligularia Duv............... 274
Ligusticum barbinode Michx. 393
Liliaceae.................. 143
Lilium Linn................. 149
Lilium canadense Linn....... 149
Lilium canadense var. superbum Elw............ 149
carolinianum Michx.... 149
——pardalinum var. bourgaei Bak.................. 149
Lilium philadelphicum Linn... 150
——*superbum* Linn.......... 149
Lilium umbellatum Pursh... 150
Limnantheae (*Trib.*) B. and H. 333
Limnanthemum Gmel....... 418
——lacunosum Michx...... 418
——peltatum Griseb....... 226
Limnetis Pers................ 69
——cynosuroides Pers...... 70
——polystachya Pers....... 70
Limnia Linn.............. 218
Limnochloa Nees........... 99
——acicularis Reich........ 100
Limodorum Linn............ 175
——tuberosum Linn........ 175
Limnopeuce Vaill........... 383
——vulgaris Vaill......... 383
Linaceae.................. 335
Linagrostis Adans.......... 94
——paniculata Lam........ 95
——paniculata var. B. Lam. 94
——polystachya Scop....... 95
——vaginata Scop.......... 95
Lindblomia Fr.............. 165
Lindera Adans.............. 398
Lindernia pyxidaria Pursh... 464
Linnaea Gronov............. 483
——*borealis* Linn........... 483
Linopsis Reich.............. 335
Linostachys Kl.............. 341
Linosyris Cass.............. 515
Linsecomia Buckl........... 539
Linum Linn.................. 335
——*lewisii* Pursh.......... 336
Linum perenne var. lewisii Eat. and Wr......... 336
Linum rigidum Pursh......... 335
Linum rigidum T. and G..... 336
——striatum Nutt......... 336
Linum sulcatum Ridd......... 336
Linzia Sch.-Bip............ 499
Lipandra Moq............... 211
Liparis L. C. Rich.......... 173
——correana Spreng....... 173
——liliifolia Rich.......... 174
——loeselii Rich........... 173
Liquidambar asplenifolium Linn................ 179
——peregrinum Reich...... 179
Liquiritia Moench........... 322
——lepidota Nutt.......... 322
Lithocarpus Blume.......... 190
Lithodora Griseb............ 437
Lithospermum Linn.......... 437
——*angustifolium* Michx.... 437
Lithospermum bejariense DC. 438
——breviflorum Engelm and Gray............... 437
Lithospermum canescens (Michx) 438
——*carolinense* (Walt.)...... 438
Lithospermum carolinianum Lam................. 436
——decumbens Torr....... 438
——hirtum Lehm.......... 438
Lithospermum latifolium Michx 439
Lithospermum longiflorum Spreng............... 437
——lutescens Col.......... 439
——officinale var. latifolium Willd.............. 439
——sericeum Lehm........ 438

Lithraea MIERS 346
Llerasia TRIANA.............. 500
Lobadium RAF............... 345
Lobaria HAW................. 274
Lobelia LINN................. 497
——*cardinalis* LINN......... 499
Lobelia claytonia MICHX...... 498
——glandulosa LINDL....... 498
——goodenioides WILLD.... 498
Lobelia inflata LINN.......... 497
——*kalmii* LINN............ 497
Lobelia nivea RAF............ 498
——pallida MUHL........... 498
Lobelia spicata LAM........... 498
——*syphilitica* LINN......... 498
Lobelia syphilitica var. ludoviciana A. DC......... 498
Lobeliaceae ENDL............ 494
Logarinthus E. MEY.......... 423
Lonicera LINN.............. 485
Lonicera canadensis R. and S. 486
Lonicera ciliata MUHL......... 486
Lonicera diervilla LINN....... 487
——douglasii DC........... 485
——douglasii HOOK......... 486
——dioica LINN............ 485
——flava GRAY.............. 486
——flava var. B. T. and G... 486
Lonicera glauca HILL......... 485
Lonicera media MURR........ 485
——parviflora LAM.......... 485
Lonicera sullivantii GRAY...... 486
Lonicera symphoricarpos LINN. 485
Lonicereae ENDL............. 482
Lophanthus BENTH........... 449
——anisatus BENTH......... 449
——nepetoides BENTH....... 450
——scrophulariaefolius BENTH............... 449
Lophiocarpus MICH........... 43
Lophiolepis CASS............. 558
Lophion SPACH.............. 366
Lophochloa REICH........... 77
Loretia DUR................. 82
Loroglossum L. C. RICH....... 164
Lotea WEBB................ 331
Lotodes SIEG................ 330
——argophylla OK.......... 331
——esculenta OK........... 330
——tenuiflora OK........... 330
Lotus LINN.................. 331
——*americanus* (NUTT.)...... 332
Lotus sericeus PURSH......... 332
Lowea LINDL................ 302
Lowellia A. GRAY............ 548
Lubinia VENT............... 412
Lucilia CASS................ 529
Luciola SM.................. 142
Ludwigia LINN.............. 375
——apetala WALT........... 375
——nitida MICHX........... 375
——palustris ELL........... 375
——polycarpa S. and P.... 375
Lupinus LINN................ 332
——*perennis* LINN.......... 332
Lupinus perennis var. occidentalis WATS............ 332
Lupulus Gaertn.............. 196
——communis GAERTN..... 196
Luthera SCH.-BIP............ 564
Luzula DC.................. 142
——campestris AUCT. AM... 143
——campestris var. comosa MAC.................. 143
——campestris var. multiflora L. CELAK........ 143
——campestris var. pallescens MAC................. 143
——erecta DESV............ 143
——intermedia var. multiflora SPENN........... 143
——multiflora LEJ.......... 143
——pallescens HOPPE....... 143
Lycopersicum DUN........... 458
Lycopsis virginica LINN...... 439
Lycopus LINN................ 453
Lycopus angustifolius NUTT 453, 454
Lycopus europaeus LINN....... 453
Lycopus europaeus var. sinuatus GRAY........... 453
——europaeus var. integrifolius GRAY........... 454
——europaeus WALT........ 453
——lucidus var. americanus GRAY................ 453
Lycopus lucidus var. *obtusifolius* (BENTH.)............. 453
Lycopus obtusifolius BENTH.. 453
——pumilus VAHL.......... 454
Lycopus rubellus MOENCH...... 454
Lycopus sinuatus ELL.......... 453
Lycopus uniflorus MICHX..... 454
Lycopus virginicus LINN....... 454
Lycopus vulgaris NUTT....... 453
Lygodesmia DON............. 565
——*juncea* (PURSH).......... 565
Lyonia NUTT................ 407
——*calyculata*(LINN.)........ 406
Lysias SALISB............... 165
Lysimachia LINN............ 412
Lysimachia angustifolia GRAY 413
——capitata PURSH......... 412
——ciliata LINN............ 414
——hybrida MICHX......... 413
——longifolia PURSH...... 413
——quadriflora SIMS........ 413
——quadrifolia var. LINN... 413
——racemosa MICHX....... 413
——revoluta NUTT.......... 413
——stricta AIT............ 413
Lysimachia terrestris (LINN.)... 413
——*thyrsiflora* LINN......... 412
Lysimachia vulgaris WALT.... 413
Lysimachion TAUSCH......... 376
Lysistemma STEETZ.......... 499

Lythraceae 374
Lythrum Linn 374
——*alatum* Pursh 374
——kennedyanum HBK 374

M

Machaeranthera Nees 515
Machaerina Vahl 103
Mackenia Harv 423
Macleaya Montz 309
Macoucoua Aubl 349
Macqueria Commers 337
Macroblepharos Philippi 74
Macrocalyx Trew 434
——*nyctalea* (Linn.) 434
Macrocapnos Royle 253
Macrocentrum Phillippi 165
Macrochloa Kunth 57
Macrolinum Reich 335
Macrolomia Schrad 105
Macronema Nutt 507, 514
Macronyx Dalz 328
Macropodium Hook 256
Macrorhyncus Less 564
——glaucus Eat 564
Macroselinum Schur 390
Macrotys Raf 232
Madaractis DC 554
Madocarpus Wight 554
Maia Salisb 152
Mairania Neck 407
Maiten Fouill 349
Majanthemum Wigg 152
——canadense Desf 152
——convallaria Wigg 152
——cordifolium Moench 152
——racemosum Link 154
——stellatum Link 153
——trifolium Link 153
Malachochaete Nees 97
Malaxis Sw 172
——correana Bart 173
——liliifolia Willd 174
——loeselii Sw 173
——longifolia Bart 173
——ophioglossoides Willd 173
——unifolia Michx 173
Malosma Nutt 345
Malus Rupp 283
Malus Tourn 283
——coronaria Mill 284
——microcarpa coronaria Carr 284
Malva Linn 360
Malva houghtonii T. and G 360
Malva involucrata (Nutt.) 361
——*triangulata* Leavenw 360
Malvaceae 360
Malvastrum DC 360
Malvella J. and S 360
Mandelorna Steud 47
Mandonia Hassk 136
Mandonia Sch.-Bip 568
Manoploga Bunge 256
Marah Kell 493
Maresia Pomel 257
Marcorella Neck 356
Margarita Gaud 515
Margarospermum Decn 437
Marianthemum Schr 494
Mariscus Hall 103
Mariscus acicularis Moench 100
——albus Gilib 104
Mariscus mariscoides (Muhl.) 103
Mariscus Vahl 90
Martagon Salisb 149
Mastigoscleria Nees 105
Matricaria asteroides Linn 515
——glastifolia Hill 515
Maukschia Heuffl 105
Maundia F. Mull 41
Maytenus Feuill 348
Mecardonia R. and P 473
Mecosa Blume 165
Meclatis Spach 240
Medeola Linn 155
——*virginiana* Linn 155
Medeola virginica Linn 155
Medicago virginica Linn 318
Medium Tourn 494
Medora Kunth 152
Medusea Haw 341
Megapterium Spach 380
Megarhiza Torr 493
Megasea Haw 274
Megastachya Beauv 74
——canadensis R. and S 82
——eragrostis Beauv 75
——reptans Beauv 75
Meibomia canadensis OK. 319, 321
——dillenii OK 320
——grandiflora OK 321
——nudiflora OK 321
——paniculata OK 320
Meladenia Turcz 330
Melampyrum Linn 472
Melampyrum americanum Michx 472
——brachiatum Schwein 472
——latifolium Muhl 472
Melampyrum lineare Lam 472
Melampyrum pratense var. americanum Benth 472
——sylvaticum Hook 472
Melandryum virginicum A. Br 220
Melanocarya Turcz 348
Melanococca Bl 346
Melanoseris Decne 560
Melanthium Linn 145
Melanthium aspericaule Poir 144
——hybridum Pursh 145
Melanthium virginicum Linn 145
Melica gmelini Roth 77
——hirsuta Koel 77
Melinum Link 53
Mella Vand 473
Melogona Tourn 458
Mengea Schauer 215

Menispermaceae 251
Menispermites Lesq 251
Menispermum Linn 251
Menispermum angulatum Moench 251
Menispermum canadense Linn. 251
Menispermum smilacinum DC 251
Menonanthes Hall 417
Mentha Linn 455
——*arvensis* Linn 455
——*canadensis* Linn 454
Menthella Perard 454
Menyanthes Linn 417
Menyanthes nymphaeoides Thunb 226
——peltata Thunb 226
Menyanthes trifoliata Linn 417
Merida Neck 219
Meridiana Linn f 219
Meriolix Raf 380
——serrulata Walp 381
Merione Salisb 160
Meristotrophis F. and M 322
Merope Wedd 529
Mertensia HBK 194
Mesodetra Raf 547
Mesodiscus proliferus Raf 397
——simplex Raf 397
Mesogramma DC 553
Mesosetum Steud 49
Mespilophora Neck 287
Mespilus Linn 287
——amelanchier Castigl 286
——arborea Michx. f 286
——arbutifolia Linn 284
——calpodendron Ehrh 289
——canadensis Linn 285
——canadensis var. cordata Michx 286
——canadensis var. obovalis Michx 286
——coccinea Marsh 288
——coccinea var. pubescens Tausch 288
——coccinea var. viridis Castigl 288
——coccinea Schmidt 288
——crus-galli Marsh 287
——cuneifolia Moench 287
——flabellata Spach 288
——latifolia Poir 289
——lobata Poir 289
——lucida Ehrh 287
——maxima Du Mont de Cours 288
——nivea Marsh 286
——odorata Wendl 288
——pubescens Wendl 288
——pyrifolia Willd 289
——rotundifolia Ehrh 288
——tiliaefolia Koch 288
——tomentosa Castigl 289
——watsoniana Spach 287
——wendlandii Opiz 288
METACHLAMYDEAE 402
Metagonia Nutt 409
Metazanthus Meyen 554
Metopium P. Br 345
Mezleria Presl 497
Michelaria Dum 84
Micrampelis Raf 493
——*echinata* (Muhl.) 493
Micrampelis lobata Greene 494
Micranthes pennsylvanica Haw 274
Microcarpium Spach 399
Microchaete Benth 554
Microgenetes A. DC 435
Microgyne Less 525
Micromeles Decn 283
Micropetalon Pers 221
——gramineum Pers 222
——longifolium Eat. and Wr 222
Microphysa Schrenk 479
Microptelea Spach 193
Micropyrum Link 82
Micropyxis Duby 415
Microrhamnus Max 356
Microstylis Nutt 172
——ophioglossoides Nutt 173
——unifolia BSP 173
Microtinus Oerst 489
Middendorfia Trautv 374
Millefolium Tourn 549
Milium capillare Moench 52
——pungens Torr 58
——racemosum Sm 58
Mimosa illinoensis Michx 308
Mimosoideae 308
Mimulus Linn 462
Mimulus glabratus Gray 463
Mimulus glabratus var. *jamesii* (T. and G.) 463
Mimulus jamesii T. and G 463
Mimulus ringens Linn 463
Mirabilis Linn 216
——*angustifolius* (Nutt.) 216
——*hirsutus* (Pursh) 217
——*nyctagineus* (Michx.) 217
Mischospora Boekcl 103
Miscopetalum Haw 274
Mitella Linn 276
Mitella cordifolia Lam 276
Mitella diphylla Linn 277
——*nuda* Linn 276
Mitella prostrata Michx 276
——reniformis Lam 276
Mitellopsis Meissn 276
Mitostigma Blume 165
Mitrospora Nees 104
Mnemion Spach 366
Moehringia Linn 224
——*lateriflora* (Linn.) 224
Moenchia Ehrh 223
Moenchia Medic 147
Moldavica Moench 448
Moly Moench 147

Molyza Salisb 147
Momisia Dum 194
Momordica echinata Muhl 493
——lobata Ser 494
Monachather Steud 69
Monadenus Salisb 144
Monandraira Em. Desvx 67
Monarda Linn 450
Monarda allophylla Michx 450
Monarda fistulosa Linn 450
Monarda involucrata Wend 450
—— longifolia Lam 450
——lutea Michx 450
——oblongata Ait 450
Monarda punctata Linn 450
Monarda varians Bart 450
Moneses Salisb 403
Monniera P. Br 473
——*rotundifolia* Michx 473
MONOCOTYLEDONES 31
Monogynella Desm 429
Monopsis Salisb 497
Monosis DC 499
Monotropa Linn 405
Monotropa morisoni Pers 405
——morisoniana Michx 405
Monotropa uniflora Linn 405
Monotropaceae Lindl 402
Montelia Gray 213
Montelia tamariscina var. concatentata Gray 214
Monteverdia Rich 349
Montolivaea Reich. f 165
Moraceae 195
Morella Lour 178
Morisia Nees 104
Morocarpus Moench 211
——capitatus Moench 212
Morus Linn 195
Morus canadensis Lam 195
——missouriensis Audib 195
Morus rubra Linn 195
Morus rubra var. canadensis Loud 195
——scabra Willd 195
Moscatella Cord 49
Moschetallina Tourn 491
——tetragona Moench 491
Moya Gris 349
Mozula Raf 374
Muhlenbergia Schreb 58
——*ambigua* Torr 59
Muhlenbergia aristata Pers 61
——brachyelytrum Trin 61
——cinna Trin 64
——clandestina Trin 64
Muhlenbergia diffusa Schreb 59
Muhlenbergia foliosa Trin 59
——glomerata Trin 60
Muhlenbergia mexicana Linn 59
Muhlenbergia pendula Bong 64
Muhlenbergia racemosa (Michx.) 60
——*racemosa* var. *ramosa* Vas 60
——*sobolifera* (Muhl.) 60
Muhlenbergia sylvatica var. setiglumis Wats 59
Muhlenbergia tenuiflora (Willd.) 59
Muhlenbergia willdenovii Trin 59
Mulgedium Cass 560
——floridanum DC 561
——heterophyllum Nutt 561
——leucophaeum DC 560
——lyratum Cass 561
——pulchellum T. and G 561
Munbya Pomel 330
Murrithia Zoll 394
Muscaria Haw 274
Myagrum argenteum Pursh 263
Mycelis Cass 560
Mygalurus Link 82
Myosotis Linn 439
——*arvensis* (Linn.) 439
——*caespitosa* Schultes 439
Myosotis deflexa Wahl 440
——inflexa Engelm 439
——intermedia Link 439
——scorpioides var. arvensis Linn 439
——stricta Gray 439
——verna Nutt 439
——virginiana Linn 440
Myosotis virginica (Linn.) 439
Myosotis virginica Linn 440
Myriandra Spach 362
Myrica Linn 178
——*asplenifolia* (Linn.) 179
Myrica comptonia C. DC 179
Myricaceae 178
Myriophyllites 384
Myrrhis Scop 398
——*aristata* (Thunb.) 398
——*claytoni* Michx 398
Myrrhis longistylis Torr 398
Myriophyllum Linn 383
——*heterophyllum* Michx 384
——*spicatum* Linn 384
——*verticillatum* Linn 384
Myzorhiza Phil 475

N

Nabalus Cass 565
——albus Hook 566
——asper T. and G 566
——crepidineus DC 567
——fraseri DC 566
——glaucus Raf 566
——illinoensis DC 566
——racemosus DC 566
——trilobatus DC 566
Nageia Gaertn 178
Najadaceae 40
Najadaceae BH 33, 40, 41
Najadeae (*Tribus*) 33
Najadeae BH 40
Najas Linn 40
——*flexilis* (Willd.) 40
Najas graminea Rostk 40

Nandirhobeae Endl.......... 493
Napaea Linn................ 361
——*dioica* Linn............. 361
Napaea scabra Linn.......... 361
Nardarus Reich............. 82
Narthecium glutinosum Michx.............. 144
Narthex Falc............... 390
Nasmythia Huds............. 136
——articulata Huds........ 136
Nasella E. Desvx............ 57
Nasturtiopsis Boiss.......... 259
Nasturtium R. Br............ 259
——*hispidum* (Desv.)........ 259
——*palustre* (Leys.)......... 260
Nasturtium palustre var. hispidum T. and G....... 259
Nasturtium sinuatum Nutt.... 260
Naumbergia Moench......... 412
——thyrsiflora Reich....... 412
Navarelia DC................. 240
Navarretia linearis OK....... 433
Navidura Alef.............. 313
Nechamandra Planch........ 46
Neckeria Scop...... 254
——*aurea* (Michx.).......... 254
——*flavula* (Raf.).......... 255
——*micrantha* (Engelm.).... 255
——*sempervirens* (Linn.)..... 255
Nectaroscordum Lindl....... 147
Negundium Raf............. 351
——fraxinifolium Raf...... 351
Negundo Moench........... 351
——aceroides Moench...... 351
——fraxinifolium Nutt..... 351
——lobatum Raf........... 351
——mexicanum DC......... 351
——negundo Sudw.......... 351
——trifoliatum Raf........ 351
Neillia Don................. 281
——opulifolia B. and H..... 281
Nelumbium Juss............ 225
——codophyllum Raf....... 226
——jamaicaensis DC........ 226
——luteum Willd.......... 226
Nelumbo Adans. 225
Nelumbo lutea Pers.......... 226
Nelumbo nelumbo (Linn.)...... 226
Nematopyxis Miq............ 375
Nemauchenes Cass........... 567
Nemexia Raf................ 157
Nemochloa Nees............ 104
Nemophila paniculata Spreng.............. 435
Nemum Desvx....... 97
Nenuphar Hayne........... 228
Neoceis Cass................. 553
Neolexis Salisb.... 152
Neotinea Reich. f........... 165
Neottia cernua Willd........ 170
——gemmipara Sm 171
——pubescens (Willd.)..... 171
——repens Sw.............. 172
——tortilis Bart......... 170
Nepeta flexuosa Walt........ 452
——virginica Willd........ 452
Nervilia Gaud............... 169
Neubeckia Alef.............. 160
Neurophyllum T. and G...... 391
Nibora Raf.... 464
Nicolsonia DC............... 319
Nidorella Cass............. ... 525
Nigritella L. C. Rich......... 165
Nintooa Sweet.............. 485
Niobea Willd.... 159
Nirbisia Don................ 234
Nissolia Tourn............... 313
Nolanaceae B. and H......... 427
Nomochloa Beauv.......... 97
Nomochloa Nees............. 104
Normania Lowe............. 458
Norta Schur......... 257
Norysca Spach.............. 362
Nothocalais Greene.... 563
——*cuspidatum* (Pursh)..... 563
Nothofagus.... 190
Notholirion Boiss............ 149
Noticastrum DC............. 515
Notobasis Cass...... 558
Notonia DC................. 554
Nototriche Turcz 360
Nuphar Sm...... 228
——advena Ait f.......... 228
Nuttallia Bart.............. 360
——involucrata Nutt....... 361
Nyctaginaceae............. 216
Nytaginea Chois.... 216
Nyctago Juss............ ... 216
Nyctalea Scop............... 434
Nycterium Vent............ 458
Nymphaea Linn. em. Sm..... 227
Nymphaea Ludw............ 228
——*advena* Soland......... 228
Nymphaea alba Nutt........ 227
——alba Walt............. 228
——arifolia Salisb.......... 228
——lutea Walt......... ... 228
——maculata Raf.......... 227
——nelumbo var. B. Linn... 226
——odorata Ait.... 228
——ordorata Dryand........ 228
——reniformis DC.......... 227
——spiralis Raf..... 227
——tuberosa Paine......... 227
Nymphaeaceae 225
Nymphaeaceae Baill.... 271
Nymphaeites.... 225
Nymphodes Ludw.... 418
——*lacunosum* (Vent.)...... 418
Nymphosanthus Rich........ 228
Nyssaceae Endl............. 399

O

Oakesia Wats............... 146
——sessilifolia S. Wats..... 146
Obaejaca Cass. 553
Obeliscaria Cass............. 537
——columnaris DC......... 537

Obeliscaria pinnata Cass..... 537
Obolaria Sieg.............. 483
Ochroxylum Schreb.......... 337
Ochrus Tourn.............. 313
Ocimastrum Rupp........... 379
Octarillum Lour............ 373
Odonectis Raf.............. 169
Odonteilema Turcz......... 341
Odontocarpa Neck.......... 492
Odontoloma HBK........... 499
Odontotrichum Zucc......... 554
Oenothera Linn.............. 380
—— *albicaulis* Nutt......... 381
—— *biennis* Linn........... 382
Oenothera chrysantha Michx. 382
—— fruticosa Gray......... 381
—— gauroides Hornem...... 382
—— pallida Lindl........... 381
—— parviflora Linn......... 382
—— pinnatifida var. integrifolia Gray............ 381
Oenothera pumila Linn........ 382
Oenothera pusilla Michx..... 382
Oenothera rhombipetala Nutt.. 382
—— *serrulata* Nutt.......... 381
Oenotheraceae............ 375
Oldenlandia Baill........... 478
—— purpurea var. longifolia Chap................ 478
Oleaceae.................. 415
Oligandra Less.............. 211
Oliganthera Endl........... 211
Oliganthes Cass............. 499
Oligosporus Cass............ 550
Olympia Spach.............. 362
Omalocline Cass............. 567
Omalotheca Cass............ 529
Ombellifereés Baill......... 385
Onagra Spach.............. 380
—— biennis Spach.......... 382
Onagraceae Lindl........... 375
Onagrariaceae Baill......... 383
Oncostylis Nees............. 103
Onocyclus Siemss............ 160
Onopordum Linn............ 558
Onoseris acuminata Raf...... 382
Onosmodium Michx......... 436
—— carolinianum Lam...... 436
Onosmodium carolinianum var. *molle* (Michx)........ 437
Onosmodium molle Beck..... 436
—— molle Michx........... 437
Ooclinium DC............... 501
Opetiola Gaertn............. 90
Ophioscordon Wallr......... 147
Ophryoscleria Nees.......... 105
Ophrys cernua Linn.......... 170
—— corallorhiza Linn....... 174
—— latifolia Linn.......... 173
—— liliifolia Linn.......... 174
—— paludosa Ocd.......... 173
—— trigona Gilib........... 173
Oplismenus muricatus Kunth 49
Oplotheca Nutt............. 214
Oplotheca floridana Nutt.... 214
Opoidea Lindl.............. 390
Opulaster Med.............. 281
Opulaster bullatus Med...... 281
Opulaster opulifolius (Linn.)... 281
Opulus Tourn.............. 489
Opuntia Mill............... 371
Opuntia caespitosa Raf....... 372
Opuntia fragilis (Nutt)........ 371
Opuntia mesacantha Raf..... 372
Opuntia missouriensis DC....... 371
Opuntia polyacantha Haw.... 371
Opunati rafinesquii Engelm... 372
Orbus Linn................ 313
Orchidaceae.............. 162
Orchiodes Trew............. 171
—— pubescens OK.......... 171
—— repens OK............. 172
Orchis Linn................ 164
Orchis bidentata Ell........ 168
—— bracteata Willd........ 168
—— clavellata Michx....... 168
—— dilatata Pursh......... 167
—— fimbriata Ait.......... 166
—— fissa Muhl............. 166
—— flava Linn............. 168
—— fuscescens Pursh....... 168
—— grandiflora Bigel....... 166
—— herbiola Pursh......... 168
—— humilis Michx......... 165
—— hyperborea Linn....... 167
—— incisa Muhl............ 166
—— koenigii Retz.......... 167
—— lacera Michx........... 166
—— leucophaea Nutt...... 166
—— loeselii Linn........... 173
—— psycodes Linn.......... 166
—— psycodes Muhl......... 166
Orchis spectabilis Linn........ 165
Orchis tridentata Willd..... 168
—— virescens Willd........ 168
Oreinotinus Oerst........... 489
Oreanthus Raf.............. 276
Oregeum Ser................ 299
Oreoselinum Bieb........... 390
Oreosplenium Zahl.......... 274
Orixa Thunb................ 348
Ormoselenia Tausch......... 390
Ornitrophis Cass............ 558
Ornus Pers................. 416
Orobanchaceae............ 475
Orobanche biflora Nutt...... 476
—— fasciculata Nutt....... 476
—— ludoviciana Nutt...... 475
—— uniflora Linn.......... 476
Orobella Presl.............. 315
Orobus diffusus Nutt........ 316
—— ochroleucus A. Br...... 314
—— venosus A. Br......... 314
Orontiaceae Lindl........... 130
Ortachne Nees.............. 56
Orthocentron Cass........... 558
Orthoraphium Nees......... 57
Orthosporum Nees.......... 211

Oryza clandestina A. Br. 54
Oryzopsis Michx 57
Oryzopsis asperifolia Kunth 58
Oryzopsis asperifolia Michx 58
Oryzopsis canadensis Torr 58
Oryzopsis juncea (Michx.) 58
Oryzopsis melanocarpa Muhl 58
Oryzopsis parviflora Hook 58
Osmia Sch-Bip 501
Osmodium Raf 436
Osmorhiza Raf 398
——brevistylis DC 398
——claytoni BSP 398
——cordata Raf 398
——dulcis Raf 398
——longistylis DC 398
——villosa Raf 398
Ostericum Hoff 391
Ostrya Scop 186
——*ostrya* (Linn.) 187
Ostrya virginiana Koch 187
Ostrya virginica Willd 187
Otachyrium Nees 49
Otaria HBK 423
Otophylla Benth 468
——michauxii Benth 468
Ototropis Nees 319
Oxalidaceae 334
Oxalideae (*Trib.*) B. and H. 333
Oxalis Linn 334
Oxalis corniculata var. stricta Sav 334
——dillenii Jacq 334
——florida Salisb 334
Oxalis longiflora Linn 335
Oxalis lyoni Pursh 334
Oxalis stricta Linn 334
Oxalis vespertilionis Gray 335
——violacea Linn 335
Oxyacantha Rupp 287
Oxybaphus L'Her 216
——angustifolius Sweet 216
——hirsutus Sweet 217
——nyctagineus Sweet 217
Oxybasis Kar. and Kir 211
Oxycaryum Nees 96
Oxycoccus Ludw 408
Oxycoccus hispidulus Pers 407
Oxycoccus macrocarpus (Ait.) 409
——*oxycoccus* (Linn.) 409
Oxycoccus palustris Pers 409
——vulgaris Pursh 409
Oxydium Benn 319
Oxygraphis Bunge 241
——*cymbalaria* (Pursh) 241
Oxylepis Benth 547
Oxypogon Raf 315
Oxypolis Raf 391
——denticulata Raf 391
——rigida Raf 391
——tricuspidata Raf 391
Oxyramphis Wall 317
Oxys Tourn 334
Oxytropis DC 322
Oxytropis hookeriana Nutt 323
——lamberti Pursh 323
——splendens Doug 322
Ozoroa Del 345

P

Pachiloma nuttallii Raf 389
Pachycarpus E. Mey 423
Pachyloma Spach 241
Pachylophus Spach 380
Pachypodium Nutt 256
Pachypodium Webb 257
Padus cartilaginea Roem 306
——densiflora Roem 307
——fimbriata Roem 307
——hirsuta Roem 307
——micrantha Roem 307
——oblonga Moench 307
——obovata Roem 307
——rubra Mill 307
——serotina Agh 306
——virginiana Roem 306
Palavia Cav 216
Paleya Cass 567
Palimbia Bess 390
Paliurus Adans 355
Palladia Moench 412
Pallavicinia DeNot 458
Pallinia scoparia Spreng 48
Palmerella Gray 497
Paltoria R. and P. 349
Panax americanum Raf 386
——lanceolatum Raf 385
——quinquefolium Linn 386
——trifolium Linn 385
Panicularia Fabr 80
——*americana* (Torr.) 81
Panicularia aquatica OK 81
Panicularia canadensis (Michx.) 82
——*elongata* (Torr.) 82
——*fluitans* (Linn.) 80
——*nervata* (Willd.) 81
Panicum Linn 48
——*agrostoides* Muhl 51
Panicum autumnale Bosc 52
——barbulatum Michx 50
Panicum capillare Linn 52
Panicum clandestinum Hook 51
Panicum crus-galli var. *hispidum* (Muhl.) 49
——*depauperatum* Muhl 50
Panicum dichotomiflorum Michx 52
Panicum dichotomum Linn 50
——*dichotomum* var. *pubescens* (Lam.) 50
Panicum divergens Muhl 52
——elongatum Pursh 51
——fragile Kunth 52
——hispidum Muhl 49
——involutum Torr 50
Panicum latifolium Linn 51
Panicum laxiflorum Lam 50
——microcarpon Muhl 50

Panicum multiflorum Poir. 51
——muriatum Michx. 49
——nitidum Lam. 50
Panicum nudum Walt. 52
Panicum pauciflorum Ell. 50
——pubescens Lam. 50
——ramulosum Michx. 50
——rectum R. and S. 50
Panicum scoparium Lam. 50
Panicum strictum Pursh. 50
——strigosum Ell. 52
Panicum virgatum Linn. 51
Panicum walteri Poir. 51
——walteri Pursh. 49
Panicum xanthophysum A. Gray 51
Papaveraceae 252
Papilionatae 308
Papyrus Willd. 91
Paractaenium Beauv. 49
Parallosa Alef. 315
Parapodium E. Mey. 423
Parastranthus G. Don 497
Parietaria Linn. 199
Parietaria debilis var. pennsylvanica Wedd. 199
Parietaria pensylvanica Muhl. 199
Parillax Raf. 157
Paritum St. Hil. 361
Parnassia Linn. 277
Parnassia americana Muhl. 278
Parnassia caroliniana Michx. 278
——glauca Raf. 278
——grandiflora Raf. 278
——ovata Muhl. 278
Parnassia palustris Linn. 278
Parnassia palustris Pursh. 278
——repanda Raf. 278
——rotundifolia Raf. 278
Paronychieae 219
Paronychia canadensis Wood. 225
——dichotoma Fenzl. 225
Parosella Cav. 329
Partheniastrum Nissol. 533
Parthenice T. and G. 533
Parthenium Linn. 533
——*integrifolium* Linn. 533
Parthenocissus Planch. 357
——*quinquefolia* (Linn.) 357
Pasania Oerst. 190
Pasania (*Sect.*) 190
Paspalum aristatum Moench 72
Pastinaca Tourn. 390
——nudicaulis Spreng. 390
Patrinia ceratophylla Hook. 491
——longifolia MacNab. 491
Pedicularis Linn. 471
Pedicularis aequinoctialis HBK. 472
Pedicularis auriculata Sm. 471
Pedicularis canadensis Linn. 472
Pedicularis gladiata Michx. 472
Pedicularis lanceolata Michx. 471
Pedicularis pallida Pursh. 471
Pedicularis resupinana Pursh 471
——virginica Poir. 471
Pedilea Lindl. 172
Pedrosia Lowe. 331
Pelonastes Hook. f. 383
Peltopsis Raf. 33
——perfoliata Raf. 35
Penaea Plum. 338
Penstemon Mitch. 461
——*acuminatus* Dougl. 461
Penstemon albidus Nutt. 461
——bradburii Pursh. 461
——cristatus Mac. 461
——fendleri Gray. 461
Penstemon gracilis Nutt. 462
——*grandiflorus* Nutt. 461
——*hirsutus* (Linn.) 462
Penstemon nitidus Dougl. 461
——pubescens Soland. 462
——pubescens var. gracilis Gray 462
Penstemon teretiflorus Nutt. 461
Penstemon viscidulum Nees. 461
Pentacalia Cass. 554
Pentacophrys Gray. 216
Pentaglossum Forsk. 374
Pentagonia Sieg. 496
——*perfoliata* (Linn.) 496
Pentalophus DC. 437
——mandanense DC. 437
——longiflorus A. DC. 437
Pentameris Beauv. 69
Pentanoma Moc. and Sess. 337
Pentanthus Hook. and Arn. 554
Pentaphylloides Tourn. 293
Pentaphiltrum Reich. 456
Pentaple Reich. 223
Pentapteris Hall. 384
Pentapterophyllum Dill. 384
Pentastemon Wettst. 461
Penthorum Linn. 273
——*sedoides* Linn. 273
Pentreas Raf. 215
Pentstemon L'Her. 461
Peramibus Raf. 543
Peramium Salisb. 171
——*pubescens* (Willd.) 171
——*repens* (Linn.) 172
Periballanthus F. and S. 154
Pericalia Cass. 554
Pericallis Webb. 553
Perijaea Tul. 337
Peristylis Blume. 165
——bracteatus Lindl. 168
Peritoma DC. 269
——integrifolia Nutt. 270
——serrulatum DC. 270
Perizomanthus Pursh. 253
Perrottetia DC. 319
Persicaria amphibia S. F. Gray 206
——virginiana Gaertn. 209
Personatae DC. 459
Perularia Lindl. 165
Petaloma Raf. 341

Petalostemon Michx 328
——alopecuroides Pers 330
——candidus Michx 329
——villosus Nutt 328
——virgatum Nees 329
Petrocallis R. Br 263
Petrophytum Nutt 282
Petrosciadium Edgew 394
Peucedanites Heer 390
Peucedanoides Boiss 390
Peucedanum Linn 390
——*nudicaule* (Pursh) 390
Peucedanum Tourn 390
Peyritscia Fourn 68
Pfeifferia Buch 429
Phaca Linn 323
——canadensis MacM 325
——caryocarpa MacM 326
——elongata Hook 324
——flexuosa Hook 324
——gracilis MacM 325
——hypoglottis MacM 324
——lotiflora T. and G 323
——parviflora Nutt 325
——plattensis MacM 325
Phacelia Juss 435
Phacelia fimbriata Pursh 436
Phacelia purshii Buckl 436
Phacocapnos Bernh 254
Phaecasium Cass 567
Phaenixopus Cass 560
Phaenopus DC 560
Phaenopyrum Roem 287
——coccinium Roem 288
——subvillosum Roem 288
——wendlandii Roem 288
Phalacroderis DC 567
Phalacroloma Cass 525
——obtusifolium Cass 526
——acutifolium Cass 527
Phalacros Wenz 287
Phalangium esculentum Nutt 151
——fraseri Nutt 151
Phalaris Linn 54
Phalaris americana Torr 55
Phalaris arundinacea Linn 55
Phalaris erucaeformis Linn 72
——oryzoides Linn 54
Phalerocarpus G. Don 407
——serpyllifolius Don 407
Phasellus Moench 312
Phaseolus Linn 312
Phaseolus angulosus (Muhl.) 312
Phaseolus diversifolius Pers. 312
——helvolus Linn 312
——macrostachys Ell 312
——monoicus Eat. and Wr. 315
——paniculatus Michx 312
Phaseolus pauciflorus Benth 312
Phaseolus perennis Walt 312
Phaseolus polystachyos (Linn.). 312
Phaseolus tuberosus Eat and Wr 315
Phelipaea fasciculata Spreng 476
Phelipaea ludoviciana Walp 475
Phemeranthus Raf 218
——teretifolius Raf 218
Philadelphieae Lindl 274
Philipoea Reut 475
Philoglossa Baill 531
Phlebosporium Jungh 317
Phledineum Spach 234
Phloganthea Cav 433
Phlox Linn 431
Phlox aristata Michx 432
——canadensis Sweet 431
——carnea Sims 432
——cuspidata Scheele 432
Phlox divaricata Linn 431
——*glaberrima* Linn 432
Phlox glutinosa Buckl 431
Phlox maculata Linn 432
Phlox penduliflora Sw 422
Phlox pilosa Linn 432
——*pilosa* forma *albiflora* 432
Phlox pyramidalis Sm 432
——reflexa Sw 432
——revoluta Aik 432
Phragmites Trin 73
Phragmites communis Trin 73
——graecus Steud 73
Phragmites phragmites (Linn.). 73
Phragmites vulgaris BSP 73
Phryma Linn 442
——leptostachya Linn 442
Phylace Nor 338
Phyllachneae Baill 494
Phyllantheae Agh 340
Phyllanthophora Gray 360
Phyllodium Desvx 319
Phyllodon Salisb 147
Physalis Linn 456
——*angulata* Linn 458
——*grandiflora* Hook 458
Physalis hirsuta Dun 457
Physalis lanceolata Michx 456
Physalis nyctaginea Dun 457
——obscura var. viscido-pubescens Michx 457
——pennsylvanica Gray 456
Physalis philadelphica Lam 458
Physalis pruinosa Linn 457
——pumila Nutt 456
Physalis pubescens Linn 457
Physalis viscosa Ell 457
Physalis virginiana Mill 457
Physalis viscosa Gray 457
Physaria Nutt 263
——argentea MacM 263
Physkium Lour 46
——natans Lour 46
Physocarpa Raf 281
Physocarpos Cambess 281
——opulifolius Raf 281
Physocarpum Spach 248
Physolepidium Schrenk 256
Physostegia Benth 446
——*virginiana* (Linn.) 446

Phyteuma Lour 487
Phytolaca Raf 215
Phytolacca Linn 215
——*decandra* Linn 215
Phytolaccaceae 215
Picnocomon Vaill 558
Picnomon Adans 558
Picris Baill 568
Picrococcus elevatus Nutt 411
——floridanus Nutt 411
Picrothamnus Nutt 550
Pieris Don 406
Pilea Lindl 198
——pumila Gray 198
Pileostegia Turcz 350
Pilosella Sch.-Bip 568
Pimpinella Linn 394
——*integerrima* (Linn.) 395
Pinardia Neck 516
Pinastella Dill 383
Pionandra Miers 458
Piptatherum Beauv 57
——nigrum Torr 58
Piptochaetium Presl 57
Piptolepis Sch.-Bip 499
Pircunia Moq 215
Pirococcus Nutt 409
Pirola Linn 403
——*elliptica* Nutt 404
Pirola obovata Bert 404
Pirola rotundifolia Linn 404
Pirola rotundifolia var. incarnata DC 404
——rotundifolia var. uliginosa (Torr.) 404
——rotundifolia Michx 404
Pirola secunda Linn 403
——*secunda* var. *pumila* Gray 403
Pirola uliginosa Torr 404
Pirolaceae 402
Pirolaceae B. and H 405
Pirophorum Neck 283
Pirus Linn 283
Pirus alnifolia Spreng 285
Pirus arbutifolia (Linn.) 284
Pirus botryapium Linn. f 286
Pirus coronaria Linn 284
Pirus floribunda Lindl 284
Pirus sambucifolia Cham. and Schlecht 283
Pirus sanguinea Pursh 285
Pirus Tourn 283
Pistiaceae Lindl 132
Pistolochia Raf 201
Pithosilum Cass 554
Pityopsis Nutt 507
Pityrosperma S. and Z 232
Pladaroxylon Endl 554
Plantaginaceae 476
Plantago Linn 476
Plantago gnaphalioides Nutt 477
——hookeriana F. and M 477
——kamtschatica Hook 477
——lagopus Pursh 477
Plantago major Ell 477
Plantago major Linn 477
Plantago major var. minima Decn 477
Plantago patagonica var. *gnaphalioides* (Nutt.) 476
Plantago purshii R. and S 477
Plantago rugelii Decn 477
Platanaria S. F. Gray 32
Platanthera Lindl 165
——bracteata Torr 168
——dilatata Lindl 167
——fimbriata Lindl 166
——flava Gray 168
——herbiola Lindl 168
——hookeriana Lindl 167
——hyperborea var. A. Lindl 167
——hyperborea var. dilatata Lindl 167
——koenigii var. A. Lindl 167
——lacera Gray 166
——psycodes Lindl 166
——tipuloides Lindl 169
Platypetalum R. Br 268
Platyraphe Miq 394
Platyraphium Cass 558
Platystylis Blume 173
Platystylis Sweet 313
Pleiosmilax Seem 157
Pleurandra alba Raf 376
Pleurolobus St. Hil 319
——*canadensis* (Linn.) 319
——*canescens* (Linn.) 320
——*dillenii* (Darl.) 320
——*grandiflorus* (Walt.) 321
——*nudiflorus* (Linn.) 321
——*paniculatus* (Linn.) 320
Pleuropterus Turcz 204
Pleurostachys Brongn 104
Pleurostemon album Raf 376
Pleurotaenia Hohen 390
Plinthanthesis Steud 69
Pluridens Neck 545
Pneumonanthe Schmidt 418
Poa Linn 78
Poa anceps Pr 79
——angustifolia Wahl 78
——aquatica var. americana Torr 81
——caesia Auct 78
——caesia var. strictior Gray 78
——canadensis Beauv 82
——caroliniana Spreng 74
——cilianensis All 75
——cinerea Vill 78
——complanata Schur 79
Poa compressa Linn 79
Poa cristata Willd 77
——crocata Michx 78
——debilis Thuill 78
——effusa Kit 79
——elongata Torr 82
——eragrostis Sm 75
——exigua Dum 78

Poa fertilis Host 78
——firmula Gaud 78
——fluitans Koel 80
——glauca Bast 78
——glaucantha Gaud 78
——gracilescens Schrad 78
——hirsuta Auct 74
——hydrophila Pers 78
——hypnoides Lam 75
——juncea Sut 78
——lineata Pers 81
——megastachya Koel 75
——multiflora Forsk 75
——muralis Wibb 79
Poa nemoralis Linn 78
Poa nemoralis Pursh 79
——nervata Willd 81
——nutans Gilib 78
——nutans Link 83
——oblonga Bmg 75
——palustris DC 78
Poa palustris Linn 78
Poa parviflora Pursh 81
——pectinacea Auct 74
——pectinacea Michx 74
——planiculmis Pr 79
——polynoda Parn 79
——pyramidata Lam 77
——reptans Michx 75
——riparia Wolf 78
——serotina Ehrh 78
——spectabilis Pursh 74
——striata Michx 81
——subcompressa Parn 79
——tenella Pursh 74
——triflora Gilib 78
Pocophorum Neck 346
Podalyria alba Sims 310
——bracteata Muhl 310
——tinctoria Lam 311
Podolotus Royle 323
Podophyllum Linn 250
Podophyllum callicarpum Raf 250
——montanum Raf 250
Podophyllum peltatum Linn 250
Podosaemum Desvx 58
Podostigma Ell 423
Pogonia Juss 169
——*ophioglossoides* (Linn.) 169
Pogonostigma Boiss 327
Pogonostylis Bertol 103
Pohlana Nees and Mart 337
Poidium Nees 78
Poikadenia Ell 330
Poinsettia Grah 341
Polanisia Raf 270
——dodecandra BSP 270
——graveolens Raf 270
Polemoniaceae 431
Polemonium Linn 433
Polemonium nyctalea Linn 434
Polemonium reptans Linn 433
Poliodendron Noe 455
Polium Moench 455
Pollalesta HBK 499
Polyacanthus Presl 348
Polyactidium Less 525
Polyactis Less 525
Polyantherix Nees 87
——hystrix Nees 88
Polycyrtus Schlecht 390
Polydora Fenzl 499
Polygala Linn 338
——*cruciata* 340
Polygala cuspidata Hook 340
Polygala paucifolia Willd 339
Polygala purpurea Ait. f. 339
——purpurea Nutt 340
——sanguinea Linn 340
Polygala senega Linn 339
——*senega* var. *latifolia* T and G 339
Polygala uniflora Michx 339
Polygala verticillata Linn 339
——*viridescens* Linn 340
Polygalaceae 338
Polygonaceae 202
Polygonastrum Moench 152
Polygonatam Adans 154
Polygonatum angustifolium Pursh 155
Polygonatum biflorum (Walt.) 155
Polygonatum canaliculatum Pursh 154, 155
Polygonatum commutatum (Schult.) 155
Polygonatum giganteum Dietr 154
——hirtum Pursh 155
——latifolium Pursh 155
——multiflorum Pursh 155
——pubescens Pursh 155
Polygonella articulata Meisn 209
Polygonum Linn 204
——*acre* HBK 205
——*amphibium* Linn 206
Polygonum amphibium var. aquaticum Willd 206
——amphibium emersum Michx 206
——amphibium var.(?) muhlenbergii Meissn 206
——amphibium var. terrestre Willd 206
Polygonum arifolium Linn 210
——*articulatum* Linn 209
——*aviculare* Linn 209
Polygonum aviculare var. erectum Gray 208
——bicorne Raf 207
——bistorta Walt 206
——centinodium Lam 209
Polygonum cilinode Michx 210
Polygonum coccineum Muhl 206
——terrestre 206
——dumetorum var. scandens Gray 210
Polygonum emersum (Michx.) 206

Polygonum erectum LINN...... 208
Polygonum filiforme BART.... 208
——geniculatum POIR...... 209
——glandulosum POIR...... 205
Polygonum hartwrightii GRAY.. 206
——*hydropiper* LINN......... 205
Polygonum hydropiper MICHX. 205
Polygonum hydropiperoides MICHX.... 205
Polygonum hydropiperoides PURSH............... 205
Polygonum incarnatum ELL.... 207
Polygonum lapathifolium var. incarnatum WATS. and COULT 207
——linifolium MUHL........ 208
——mite ELL............... 205
——mite PURSH............ 205
——muhlenbergii S. WATS.. 206
——muticum MOENCH...... 209
——nodosum var. incarnatum GRAY........... 207
Polygonum pensylvanicum LINN. 207
Polygonum persoonii ENGELM. 205
——provinciale KOCH....... 209
——punctatum ELL......... 205
——purpureum GILIB. 206
Polygonum ramosissimum MICHX............... 208
——*sagittatum* LINN......... 210
Polygonum sagittatum var. boreale MEISN........ 210
——scabrum MOENCH....... 207
Polygonum scandens LINN..... 210
——*tenue* MICHX............ 208
Polygonum terrestre BSP..... 206
Polygonum virginianum LINN.. 209
POLYNOME SALISB........... 160
Polypogon setosus SPRENG.... 60
Polymnia BAILL............. 531
Polymnia LINN.............. 531
——*canadensis* LINN......... 531
Polymnia canadensis var. discoidea GRAY.......... 531
Polymniastrum LAM......... 531
Polydon HBK.......... 70
Polyotus NUTT.......... 423
—— heterophyllus NUTT.... 423
Polypogon glomeratus WILLD 60
—— racemosus NUTT....... 60
Polypremum ADANS.......... 492
Polyperis LESS............... 548
Polystigma MEISSN.......... 350
Polytaenia DC............... 389
——*nuttallii* DC............ 389
Pomaceae ENDL............. 281
Ponceletia THOU............ 69
Ponerorchis REICH. f......... 165
Pontederia LINN............. 137
Pontederia angustifolia PURSH 137
Pontederia cordata LINN....... 137
Pontederia mucronata RAF... 137
Pontederiaceae 137
Populago TOURN............ 230
Populophyllum 179
Populus LINN............... 179
Populus atheniensis HORT.... 181
——angulata AIT.......... 179
——angulosa MICHX........ 180
Populus balsamifera LINN..... 180
Populus balsamifera var. genuina WESM.......... 180
——balsamifera lanceolata MARSH............... 180
——canadensis MICHX. f... 180
——candicans AIT......... 180
Populus grandidentata MICHX.. 180
Populus grandidentata var. pendula TORR........ 180
——laevigata AIT......... 179
——macrophylla LODD..... 180
Populus monilifera AIT........ 179
Populus tacamahaca MILL.... 180
——tremuliformis EM...... 181
Populus tremuloides MICHX... 181
Populus trepida WILLD....... 181
——viminea BON.......... 180
Porphyroscias MIQ........... 391
Porroteranthe STEUD......... 80
Porrum SALISB.... 147
Portulaca LINN.............. 219
——*retusa* ENGELM. and GRAY 219
Portulacaceae.............. 217
Portuna NUTT. 406
Potamogeton LINN............ 33
Potamogeton acuminatus SCHUM............... 38
——acuminatus WAHL...... 38
——acutifolius PR.......... 36
Potamogeton amplifolius TUCKM. 35
Potamogeton angustifolius OP.................... 36
——berchtholdii FIEB...... 36
——caudatus SEID.......... 38
——complanatus WILLD.... 39
—— compressus AUCT....... 39
——compressus SM......... 37
——cornutus PR. 38
——crispus DARL.......... 35
——cuspidatus SCHRAD..... 39
——fasciculatus WOLFG.... 37
——filicaulis SCHUR. 37
——flexicaule DETH........ 38
——flexuosus SCHL. and WRED 38
Potamogeton fluitans ROTH..... 34
——*foliosus* RAF......... 39
Potamogeton friesii RUPR.... 37
——gramineus MER.... 36
——gramineus ROTH 35
—— gramineus var. heterephyllos FRIES........ 35
Potamogeton gramineus var. *zizii* (ROTH)............... 36
——*heterophyllos* SCHREB.... 35

Potamogeton hybridus PENTAGN............ 35
Potamogeton illinoensis MORONG 36
Potamogeton interruptus KIT. 37
Potamogeton lanceolatus SM..... 38
Potamogeton loeselii R. and S. 35
——lonchites TUCKM....... 34
Potamogeton lucens LINN....... 37
Potamogeton lucens var. minor UPH................ 36
——lucens WEBB........... 38
——lucidus GULDENST...... 37
——major MORONG......... 37
——mucronatus NYM 36
Potamogeton natans LINN...... 34
Potamogeton natans var. angustatus MK....... 34
——natans var. fluitans CHAM 34
——oederi MEY............ 37
——oblongus MEY 34
——palustris TEESD......... 35
——pauciflorus PURSH...... 39
——paucifolius OP.......... 35
Potamogeton pectinatus LINN... 37
——*perfoliatus* LINN......... 35
——perfoliatus var. lanceolatus ROBBINS............ 38
——perfoliatus var. richardsoni BENNETT......... 38
——petiolaris PR............ 34
Potamogeton praelongus WULF. 38
Potamogeton proteus var. heterophyllos CHAM. and SCHLECHT............ 35
——proteus f. lucens CHAM. and SCHLECHT........ 38
——proteus f. zizii CHAM. and SCHLECHT............. 36
——purshianus MORONG..... 39
Potamogeton pusillus LINN..... 36
Potamogeton pusillus var. major FRIES.......... 37
Potamogeton rutilus WOLFG.... 37
Potamogeton serratus WEBB.. 37
——vaillantii R. and S...... 37
——verticillatum WALT..... 384
——volhynicus BESS........ 38
——zizii ROTH............. 36
Potamogeton zosteraefolius SCHUM............... 39
Potamogeton zosterophyllus DUM................ 39
Potamogetonaceae......... 33
Potaninia MAX.............. 293
Potentilla LINN.............. 293
——*anserina* LINN.......... 294
——*argentea* LINN.......... 296
——*arguta* PURSH.......... 298
Potentilla bipinnatifida DOUGL............... 297
Potentilla canadensis LINN..... 294
——*canadensis* var. *simplex* (MICHX.)........... 294
Potentilla caroliniana POIR... 294
——confertiflora TORR...... 298
——floribunda PURSH....... 295
Potentilla fruticosa LINN....... 295
Potentilla fruticosa var. americana MARSH.......... 295
Potentilla hippiana LEHM.... 297
Potentilla lacradorica LEHM.. 298
——leucophylla TORR....... 297
Potentilla millegrana ENGELM.. 298
——*norvegica* LINN.......... 289
——*palustris* (LINN.)......... 296
Potentilla paradoxa NUTT.... 297
Potentilla pensylvanica LINN.. 297
Potentilla pensylvanica var. arguta TORR.......... 299
——pensylvanica var. bipinnatifida T. and G..... 297
——pensylvanica var. hippiana T. and G........ 297
Potentilla pensylvanica var. *strigosa* PURSH........ 297
Potentilla pumila POIR....... 294
——retusa MULL........... 295
——rivalis var. millegrana WATS................. 298
——sarmentosa WILLD...... 294
——simplex MICHX.......... 294
Potentilla supina LINN........ 297
——*tridentata* SOL........... 295
Pothos foetidus MICHX....... 131
Prasium concinneum WALT.. 446
——purpureum WALT....... 446
Praxelis CASS............... 501
Prenanthes LINN............. 565
——*alba* LINN.............. 566
——*aspera* MICHX.......... 566
——*crepidinea* MICHX....... 567
Prenanthes illinoensis PERS... 566
——juncea PURSH.......... 565
——miamensis RIDD........ 566
——ovata RIDD............ 566
——proteophylla RIDD...... 566
Prenanthes racemosa MICHX... 566
Prenanthes rubricunda WILLD 566
Prenanthes serpentaria PURSH. 566
Prenanthes suavis SALISB..... 566
Prestinaria SCH.-BIP.......... 543
Prieuria DC.................. 375
Primula O. KUNTZE.......... 411
——occidentalis OK......... 411
Primulaceae............... 411
Primulopsis T. and G......... 381
Prinos LINN................. 349
——gronovii MICHX......... 350
——confertus MOENCH...... 350
——verticillatus LINN...... 350
Prionopsis NUTT............. 514
Prismatocarpus L'HER........ 496
Proteopsis SCH.-BIP.......... 499
Provenzalia ADANS. 131
Prunella LINN............... 446
Prunophora NECK............ 305
Prunopsis ANDR............. 305

Prunus Juss 305
——*americana* Marsh 305
Prunus borealis Poir 308
——cartilaginea Lehm 306
——cuneata Raf 306
——depressa Pursh 306
——duerinckii Walp 307
——hiemalis Michx 305
——hirsuta Ell 307
——lanceolata Willd 307
——mississippi Marsh 305
——nana DuRoi 307
——nigra Muhl 305
——obovata Bigel 307
——pennsylvanica Linn. f. 307
——persicifolia Desf 308
——pumila Linn 306
——rubra Ait 307
——serotina Ehrh 306
——serotina Poir 307
——spinosa Walt 305
——virginiana Linn 307
——virginiana Mill 306
Prunus-Cerasus canadensis Marsh 307
——montana Marsh 307
Pascalium Cass 554
Psamma Beauv 67
Psammoseris Boiss 567
Pseudantheae Endl 340
Pseudocapsicum Moench 458
Pseudocarex Miq 106
Pseudocyperus Segu 103
Pseudofumaria Ludw 254
Pseva Raf 402
——*maculata* (Linn.) 402
——*umbellata* (Linn.) 402
Psilocaenia Nutt 568
Psilorhegma Vog 309
Psilosanthus Neck 504
Psolanum Neck 458
Psoralea Linn 330
Psoralea alopecuroides Poir 330
——argophylla Pursh 331
——brachiata Dougl 330
——candida Poir 329
——dalea Linn 320
Psoralea esculenta Pursh 330
Psoralea floribunda Nutt 330
Psoralea incana Nutt 331
Psoralea parviflora Poir 325
Psoralea tenuiflora Pursh 330
Psorophytum Spach 362
Psycanthus Raf 338
Psychrogeton Boiss 515
Psychrophila Gay 230
Psyllophora Ehrh 106
——pauciflora Schur 130
Ptarmica Neck 549
——borealis DC 549
Ptelea Linn 338
Ptelea pentaphylla Fabr 338
——tomentosa Raf 338
Ptelea trifoliata Linn 338
Ptelea viticifolia Salisb 338
Pterochilus Hook. and Arn. 172
Pterolepis Schrad 97
Pteroloma Benth 319
Pteroneuron DC 261
Pteronia caroliniana Walt 506
Pterophyllum Nutt 231
Pteroselinum Reich 390
Pterosenecio Sch.-Bip 554
Pterota P. Br 337
Pterotheca Cass 567
Pterotheca Presl 104
Ptilagrostis Gris 57
Ptilochaeta Nees 104
Ptilosciadium Steud 104
Ptilostemon Cass 558
Pugiopappus Torr 543
Pulegium Mill 454
Pulicaria annua Gaertn 527
Pulsatilla Tourn 235
——hirsutissima Britt 239
——nuttalliana Spreng 238, 239
——patens Gray 239
Punduana Steetz 499
Purshia Raf 383
Purshia Spreng 436
——mollis Lehm 436, 437
Putranjiveae Endl 340
Putterlickia Endl 348
Pycnanthemum Michx 452
——flexuosum BSP 452
——lanceolatum Pursh 452
——linifolium Pursh 452
——virginianum Hitch 452
——virginicum Pers 452
Pycreus Beauv 90
Pygmaea Hook. f. 465
Pyrola *see* Pirola 277
Pyrola Mor 277
——corymbosa Bert 402
——maculata Linn 402
——umbellata Linn 402
Pyrrheima Hassk 136
Pyrrhopappus A. Rich 560
Pyrrocoma Hook 514
Pyrus *see* Pirus 283
——americana Newb 284
——aucuparia Mey 284
——bartramiana Tausch 286
——coronaria var. iowensis Wood 284
——iowensis Bail 284
——ovalis Bigel 286
——wangenheimiana Tausch 286
——sanguinea Pursh 286
Pythagorea Raf 374
——alata Raf 374
Pyxidium Moench 214

Q

Quamoclidion Chois 216
Quercophyllum 191
Quercus Linn 190

Quercus alba Hook........... 192
Quercus alba Linn............. 192
Quercus alba var. pinnatifida Michx................ 192
——alba var. repanda Michx 192
——ambigua Michx......... 191
——coccinea var. ?rubra Spach................ 191
——coccinea var. tinctoria Gray.................. 191
——discolor Ait............ 191
Quercus macrocarpa Michx.... 192
Quercus microcarpa A. DC.... 192
Quercus muhlenbergii Engelm.. 192
Quercus obtusiloba var. depressa Nutt........ 192
——olivaeformis Michx. f... 192
Quercus rubra Linn... 191
Quercus rubra var. runcinata A. DC... 191
——sinuata Walt.......... 192
——stellata var. depressa A. DC.................. 192
——tinctoria Bartr........ 191
——tinctoria var. angulosa Michx............... 191
——tinctoria var. sinuosa Michx... 191
Quercus velutina Lam.......... 191
Queria canadensis Nutt...... 225
——dichotoma Moench.... 225
Quineria Raf................ 357
——hederacea Raf.......... 357
——hirsuta Raf..... 357
Quinquefolium Tourn...... 293
Quinquelocularia Koch....... 494

R

Radicula palustris Moench. 260
Radiola Gmel................. 335
Ramium Rumpf.............. 198
——*cylindricum* (Linn.)...... 198
Ranapalus Kell.............. 473
——eiseni Kell........... 473
Ranaria Cham................ 473
Randalia Beauv.............. 136
Ranmanissa Engl............. 270
Ranunculaceae............ 229
Ranunculus Linn............ 241
——*abortivus* Linn.......... 244
——*abortivus* var. *micranthus.* 245
Ranunculus affinis R. Br..... 245
——alismaefolius Gray..... 246
Ranunculus ambigens S. Wats. 246
Ranunculus amoenus Led.... 245
Ranunculus aquatilis var. *caespitosus* DC............ 248
Ranunculus aquatilis var. capillaceus DC....... 247
——aquatilis var. stagnatilis DC.................. 248
Ranunculus aquatilis var. *trichophyllus* (Chaix.)...... 247
Ranunculus circinatus Sibth.. 248
Ranunculus clintoni Beck... 242
——cymbalaria Pursh...... 241
——divaricatus Gray....... 248
Ranunculus fascicularis Muhl. 243
Ranunculus fascicularis Spreng................ 244
——filiformis Michx........ 246
——flammula Pursh. 246
——flammula var. reptans E. Mey................. 246
——fluviatilis Bigel........ 247
——fluviatilis Pursh. 247
——hispidus Michx......... 243
——hispidus Pursh........ 242
——hirsutus Curt.......... 242
——hydrocharis caespitosus Hiern................ 248
——hydrocharis trichophyllus Hiern............ 247
——intermedius Eat........ 242
Ranunculus lacustris B. and T. 246
——*lacustris* B. and T. var. *terrestris* (Gray)....... 247
Ranunculus lanuginosus Walt 244
——leptopetalus Raf....... 244
——limosus Nutt........... 247
——lingua Pursh........... 246
——marilandicus Poir.. 243
——micranthus Nutt....... 245
——multifidus Bigel....... 246
——multifidus Pursh....... 246
——multifidus var. terrestris Gray................ 247
——nitidus Muhl........... 243
——nitidus Walt.......... 244
Ranunculus ovalis Raf........ 245
——*pedatifidus* Sm.......... 245
——*pensylvanicus* Linn. f.... 242
Ranunculus prostratus Poir.. 242
——purshii Rich............ 247
——radicans var. multifidus Regel............... 247
Ranunculus recurvatus Poir... 244
Ranunculus repens Auct..... 243
——repens var. hispidus T. and G................. 243
——repens var. nitidus T. and G.......... 243
——repens Linn............ 243
Ranunculus repens Linn....... 242
——*reptans* Linn............ 246
Ranunculus reptans var. filiformis DC............ 246
——rhomboideus Goldie.... 245
——robini Raf............. 246
——saniculaeformis Muhl.. 244
——sarmentosus Adans.... 241
Ranunculus sceleratus Linn.... 244
Ranunculus schlechtendahlii Hook................ 243
Ranunculus septentrionalis Poir. 243
Ranunculus tomentosus Poir. 242
——trichophyllus Chaix.... 247

Ranunculus auricomus var. affinis Laws.......... 245
——brevicaulis Hook....... 245
——canadensis Jacq........ 242
——carolinianus DC........ 243
——tridentatus HBK....... 241
——trifolius Moench....... 242
Raphione Salisb............ 147
Rapuntium Gaertn.......... 497
Ratibida Raf................ 537
——sulcata Raf............ 587
Rebis Spach................ 278
Reboulea Kunth............ 76
——gracilis Kunth......... 76
——obtusata Gray......... 76
——pennsylvanica Gray.... 76
Receveura Vell.............. 362
Reinwardtia Dum........... 335
Relchella Steud............. 66
Requienia DC............... 327
Reussia Endl............... 137
Reutera Boiss............... 394
Rhamnaceae............... 355
Rhamnella Miq.............. 356
Rhamnus Linn............... 356
——*alnifolia* L'Her......... 356
Rhamnus alpinus............ 356
——franguloides Michx..... 356
Rhaphis Lour............... 47
Rhetsa W. and Arn.......... 337
Rhinactina Less............. 515
Rhinanthaceae DC.......... 459
Rhinanthus virginicus Linn.. 468
Rhinolobium Arn........... 423
Rhodax Spach.............. 464
Rhodophora Neck........... 302
Rhodopsis Led.............. 302
Rhus Linn.................. 345
Rhus carolinense Marsh...... 347
Rhus copallina Linn.......... 347
Rhus elegans Ait............ 347
Rhus glabra Linn............ 347
Rhus hirta p. l............... 347
——hypselodendron Moench. 347
Rhus radicans Linn.......... 346
Rhus toxicodendron Auct.Am. 346
——toxicodendron var. radicans Torr........... 346
Rhus typhina Linn........... 347
Rhus typhina var. arborescens Willd............... 347
——typhina var. frutescens Willd............... 347
——venenata DC........... 346
Rhus vernix Linn............ 346
Rhynchelythrum Nees....... 49
Rhyncodium Presl.......... 330
Rhyncopetalum Fres......... 497
Rhynchospora Vahl.......... 104
——*alba* (Linn.)........... 104
Rhynchospora capillacea Torr. 104
Rhynchospora setacea (Muhl.). 104
Rhytispermum Link......... 437
Ribes Linn................. 278
Ribes albinervium Michx.... 279
——campanulatum Moench 279
Ribes cynobasti Linn.......... 380
——*floridum* L'Her......... 279
——*gracile* Michx.......... 280
Ribes gracile Torr........... 280
——hirtellum Michx....... 280
——missouriensis Nutt.... 280
Ribes nigrum Linn.......... 279
Ribes nigrum var. B. Linn... 279
——nigrum var. pennsylvanicum Marsh........ 279
——niveum Lindl.......... 280
Ribes oxycanthoides Linn...... 280
Ribes oxycanthoides var. G. Torr and Gray...... 280
——recurvatum Michx..... 279
——rotundifolium Uph..... 280
——rotundifolium var. Engelm.............. 280
——rubrum Auct........... 279
Ribes rubrum var. *albinervium* (Michx.).............. 279
Ribes rubrum var. subglandulosum Max........... 279
——saxosum Hook.......... 280
——triflorum Bigel......... 280
Ribesiaceae Endl............ 274
Ricinocarpus Burm.......... 340
——*virginicus* (Linn.)....... 341
Rienera Moench............ 327
Robertsonia Haw........... 274
Robsonia Berl.............. 278
Rochelia R. and S........... 440
Rodigia Spreng............. 568
Roegneria C. Koch.......... 85
Roemeria Moench........... 214
Roemeria Thunb............ 345
Roeperorchis Reich. f........ 165
Roldana Llav. and Lex..... 554
Rophostemon Blume......... 169
Rorella Rupp................ 272
Rorida R. and S............. 269
Roridula Forsk.............. 269
Roripa Bess................. 259
——nasturtioides Spach.... 260
Rosa Linn.................. 302
——*acicularis* Lindl........ 304
Rosa acicularis var. bourgeauiana Crep............ 304
——arkansana Port........ 304
——blanda Ait............ 304
——blanda var. arkansana Best.................. 304
——blanda var. pubescens Crep.................. 304
——blanda var. setigera Crep.................. 304
Rosa carolina Linn........... 303
Rosa carolinensis Marsh..... 303
——caroliniana Michx...... 303
——cinnamomea var. gemella Ser............... 303

Rosa cinnamomea var. glabella Ser 304
——corymbosa Ehrh 303
——engelmanni S. Wats 304
——fendleri Crep 303
——flexuosa Raf 303
——fraxinifolia Gmel 304
——gemella Willd 304
Rosa humilis Marsh 303
Rosa lucida Auct. Am 303
——lyonii Pursh 303
——parviflora Ehrh 303
——pennsylvanica Michx 303
Rosa pisocarpa Gray 303
——rafinesquii Ser 303
——sayi Schwein 304
——virginiana DuRoi 303
Rosa virginiana Mill 304
——*virginiana* var. *arkansana* (Port.) 304
——woodsii Lindl 303
Rosaceae 281
Roscyna Spach 362
Rosilla Less 548
Rossolis Tourn 272
Rothia Schreb 568
Rottboellia paniculata Spreng 70
Roucela Dum 494
Rubia Baill 479
Rubiaceae 478
Rubiaceae Baill 482, 490
Rubus Linn 289
Rubus aegopodioides Ser 292
——arcticus Walt 290
——argutus Link 291
Rubus canadensis Linn 290
Rubus canadensis Torr 292
Rubus chamaemorus Linn 290
Rubus dalibarda Linn 290
——flagellaris Willd 290
Rubus fruticosus Linn 290
Rubus fruticosus Marsh 291
Rubus hispidus Linn 290
Rubus idaeus Pursh 291
——idaeus var. americanus Torr 291
——idaeus var. strigosus Max 291
——montanus Ser 292
——obovalis Michx 290
——obovatus Ell 290
Rubus occidentalis Linn 291
Rubus procumbens Muhl 290
Rubus repens (Linn.) 290
Rubus saxatilis Bigel 292
——saxatilis var. americanus Pers 292
——saxatilis var. canadensis Michx 292
Rubus strigosus Michx 291
——*triflorus* Rich 292
Rubus trivialis Pursh 290
Rubus villosus Ait 291
Rudbeckia Linn 536
Rudbeckia angustifolia (DC.) 539
——*columnaris* Pursh 537
Rudbeckia digitata Mill 533
——discolor Ell 537
——gracilis Nutt 538
Rudbeckia hirta Linn 538
——*laciniata* Linn 538
Rudbeckia odorata Nutt 538
Rudbeckia pinnata Vent 537
Rudbeckia pinnatifida Raf 537
——quinata Mill 538
——serotina Nutt 538
——strigosa Nutt 538
Rudbeckia subtomentosa Pursh. 538
Rudbeckia tomentosa Ell 537, 538
——triloba var. a. Michx 538
Rugelia Schuttlew 554
Rumex Linn 202
——*altissimus* Wood 203
Rumex anthoxanthum Murr. 204
——aureus With 204
——britannica Meissn 203
Rumex britannicus Linn 203
Rumex maritimus Auct. Amer 204
——orbiculatus Gray 203
Rumex persicarioides Linn 204
——*salicifolius* Weinm 203
——*verticillatus* Linn 202
Rumex verticillatus Rich 203
——xanthorhizos Hoffm 203
Rutaceae 336
Ruteria Moench 330
Ruyschiana Mill 448
Rytidosperma Steud 67

S

Sabadilla Brandt 144
Sagittaria Linn 43
Sagittaria acutifolia Pursh 44
——gracilis Pursh 44
Sagittaria graminea Michx 44
Sagittaria hastata Pursh 44
——heterophylla Pursh 44
——heterophylla Schreb 44
——latifolia Willd 44
——longiloba Englm 44
——major Scop 44
——minor Mill 44
——monoica Gilib 44
——obtusa Willd 44
——purshii Kunth 44
Sagittaria rigida Pursh 44
——*sagittaefolia* Linn 44
——*sagittaefolia* f. *angustifolia* (Englm.) 45
——*sagittaefolia* f. *diversifolia* 45
——*sagittaefolia* f. *gracilis* (Pursh) 45
——*sagittaefolia* f. *hastata* (Pursh) 45
——*sagittaefolia* f. *latifolia* (Willd) 45
——*sagittaefolia* f. *obtusa* (Willd.) 45

Sagittaria sagittaefolia var. variabilis (Englm.)... 45
——simplex Auct........... 44
——simplex Pursh.......... 44
——stolonifera Englm. and Gray................. 44
——variabilis Englm........ 44
——vulgaris Guldenst...... 44
Sagotia Walp................ 319
Salicaceae-.................. 179
Salicaria Tourn.............. 374
Salicophyllum................ 181
Salix Linn..................... 181
——*amygdaloides* Anders... 185
Salix angustata Pursh....... 182
——arbuscula Pall......... 181
Salix candida Willd.......... 182
Salix caroliniana Michx...... 185
——conifera Willd......... 183
Salix cordata Muhl........... 182
——*cordata* var. *angustata* (Pursh).............. 182
——*discolor* Muhl........... 184
Salix elegans Bess............ 181
——falcata Pursh.......... 185
——fluviatilis Nutt........ 184
——fuscata Pursh.......... 183
——grisea Willd........... 183
——grisea var. subglabrata Koch................ 183
——houstoniana Pursh.... 185
Salix humilis Marsh.......... 183
Salix incana Michx........... 182
——ligustriana Michx. f.... 185
——livida var. occidentalis Gray................ 184
Salix longifolia Muhl......... 184
Salix longifolia var pedicillata Anders.............. 184
——longirostris Michx..... 183
Salix lucida Muhl............ 185
Salix lucida var. serissima Bail 185
——melanopsis Nutt....... 185
Salix muhlenbergiana Pursh. 183
——muhlenbergiana Willd. 183
Salix myrtilloides Linn........ 181
Salix myrtilloides var. pedicillaris Carey. 182
Salix nigra Marsh............ 185
Salix nigra var. falcata Gray. 185
——nivea Sm................ 182
——pedicillaris Hook....... 181
——pennsylvanica Sal...... 183
——pentandra Nutt........ 185
——pentandra Walt........ 185
Salix petiolaris Sm............ 183
Salix petiolaris var. gracilis And 183
——prinoides Pursh........ 184
——rigida Muhl............ 182
——rosmarinifolia Pursh... 183
Salix rostrata Rich............ 184
Salix rubra Rich.............. 184
——sensitiva Barr.......... 184
Salix sericea Muhl........... 183
——tomentosa Schrad...... 182
Salix tristis Ait................ 183
Salix vagans var. rostrata Anders................ 184
Salsola Linn.................. 213
Salsola carolina Michx....... 213
——caroliniana Walt....... 213
Salsola kali Linn.............. 213
Salsola kali var. caroliniana Nutt................ 213
Sambuceae B. and H.......... 490
Sambucus Linn................ 487
Sambucus canadensis Linn..... 488
Sambucus glauca Gray....... 488
——humilis Raf........... 488
——nigra Marsh............ 488
——pubens Michx.......... 488
——pubescens Pers......... 488
——pubescens var. arborescens T. and G......... 488
——pubescens var. B. Hook 488
Sambucus racemosa Linn...... 488
Sanguinaria Linn............ 252
Sanguinaria acaulis Moench. 252
Sanguinaria canadensis Linn.. 252
Sanguinaria vernalis Salisb.. 252
Sanguisorbaceae Lindl....... 281
Sanicula Linn................ 387
——*canadensis* Linn......... 388
——*marylandica* Linn....... 387
Sanicula marylandica var. canadensis Torr.......... 388
——marylandica T. and G... 388
Santalaceae................ 199
Sapindaceae Baill........... 351
Sapindaceae B. and H......350, 351
Saponaria dioica Cham. and Schlecht........... 220
Sarracena Tourn............. 225
Sarracenia Linn.............. 271
——*purpurea* Linn.......... 271
Sarraceniaceae............. 271
Sarratia Moq............... 214
Sarcoca Raf................. 215
Sarcoglottis Presl............ 170
Sarothra Linn................ 362
Satureja virginiana Linn..... 452
Saturnia Maratti........... 147
Saturnia Salisb.............. 147
Satyrium bracteatum Pers... 168
——hirsutum Gilib......... 172
——repens Linn............ 172
——repens Michx.......... 171
Sauroglossum Lindl.......... 170
Sauvagesiaceae Lindl........ 365
Savastana Schranck......... 55
Savia Raf................... 311
Saxifraga Linn.............. 274
——*oppositifolia*............. 274
Saxifraga palustris Link...... 274
Saxifraga pennsylvanica Linn. 274
Saxifraga semipubescens Sweet............... 274

Saxifragaceae 274
Scandix dulcis MUHL 398
Scepaceae LINDL 340
Schedonnardus STEUD 70
——*paniculatus* (NUTT.) 70
Schedonnardus texanus STEUD. 70
Schedonorus BEAUV 82, 83
Schelhammeria MOENCH 106
Schenodorus arundinaceus R. and S. 79
Scheuchzeria LINN 42
Scheuchzeria asiatica MIQ 42
Scheuchzeria palustris LINN 42
Scheuchzeria paniculata GILIB. 42
Schizachrium NEES 47
Schizmaxon STEUD 335
Schizocarya SPACH 376
——(?) crispa SPACH 376
Schizolepis SCHRAD 105
Schizoptera TURCZ 531
Schizonotus A. GRAY 423
Schistachne FIG. et NOT 56
Schlagintweitia GRISEB 568
Schlechtendahlia WILLD 548
Schmalzia DESVX 345
Schoenissa SALISB 147
Schoenocaulon A. GRAY 144
Schoenodorus tenellus R. and S. 83
Schoenoplectus lacustris PALLA 98
——pungens PALLA 99
——tabernaemontani PALLA 98
Schoenoprasum HBK 147
Schoenopsis BEAUV 103
Schoenus albus LINN 104
—— angustifolius VAHL 90.
——mariscoides MUHL 104
——setaceus MUHL 104
——spathaceus LINN 90
Schollera ROTH 408
Schollera SCHREB 138
——dubia OK 138
——graminea BARTR 138
——graminifolia WILLD 138
Schousbaea NICOTR 57
Schweyckerta C. C. GMEL 418
Sciadophila PHIL 356
Sciadoseris KUNZE 554
Scilla esculenta KER 151
——fraseri GRAY 151
Sciophylla WIBEL 152
Sciothamnus ENDL 390
Scirpidium NEES 99
——acicularis NEES 100
Scirpus LINN 96
Scirpus acicularis LINN 100
——acuminatus MUHL 101
——altissimus GILIB 98
——americanus PERS 99
——andrzejowskii BESS 98
——annuus THUILL, 102
Scirpus atrovirens MUHL 97
Scirpus baiothryon WAHL 101
——brayi HOPPE 98
——capillaris LINN 103
Scirpus capitatus SCHREB 102
——chaeta SCHULTES 100
——compressus MOENCH 102
——custoris HEG 98
——cyperiformis MUHL 92
——cyperinus KUNTH 96
——eriophorus VAHL 96
Scirpus fluviatilis (TORR.) 98
Scirpus glaucescens MER 101
——glaucescens WILLD 102
——glaucus SM 98
——intermedius MUHL 101
——janii BESS 98
Scirpus lacustris LINN 98
Scirpus lenticularis TORR 97
——lineatus MICHX 96
——lithuanicus BESS 98
——manophyllus BESS 98
——maritimus var. (?) fluviatilis TORR. 98
——melanostachys D'URV 101
——microcarpus PRESL 97
——mucronatus ALL 99
——muhlenbergii SPRENG 103
——multicaulis GMEL 102
——nutans BERG 102
——orgylis RAF 98
——ovatus ROTH 102
——palustris LINN 101
——pendulus MUHL 96
——polyphyllus VAHL 97
——pungens VAHL 99
——reptans THUILL 101
——robustus PURSH 98
——rothii HOPPE 99
——soloniensis DUB 102
——spathaceus MICHX 90
——subsquarrosus MUHL 90
——sylvaticus HOOK 97
——sylvaticus var. atrovirens GRAY 97
——Sylvatieus var. digynus BOECKL 79
Scirus sylvanicus var. *microcarpus* (PRESL) 97
Scirpus tenuifolius DC 99
——tenuis WILLD 100
——thyrsiflorus WILLD 96
Scirpus triangularis (PERS.) 99
Scirpus trichodes MUHL 100
——triqueter ROTH 99
——triqueter var. triangularis PERS 99
——turgidus PERS 102
——validus PURSH 98
——varius SCHREB 101
——wolfgangii BESS. 98
——(Trichophorum) eriophorum TORR 96
Schizoglossum E. MEY 423
Schizothecium FENZL 221
Sclepsion RAF 197
——divaricatum RAF 197
Scleranthaceae 219

Scleria BERG.................. 105
Scleria flaccida STEUD........ 105
——nitida WILLD.......... 105
Scleria triglomerata MICHX.... 105
——*verticillata* MUHL........ 105
Sclerobasis CASS............. 553
Sclerochloa REICH............ 82
Sclerophyllum GAUD.......... 567
Scleropoa GRISEB............ 82
Scleropus SCHRAD........... 215
Sclerotheca A. DC............ 497
Scolochloa LINK.............. 79
——*arundinacea* (LILJ.)...... 79
Scolochloa festucacea LINK... 80
Scordium CAV............... 455
Scoria RAF.................. 177
——*minima* (MARSH.)........ 178
——*ovata* (MILL.)........... 178
Scorodonia MOENCH.......... 455
Scorodosma BUNGE........... 390
Scorzonera BAILL............. 565
Scrofularina HEER........... 460
Scrophularia LINN........... 459
Scrophularia lanceolata PURSH 460
——marylandica LINN...... 460
Scrophularia nodosa var. *marylandica* (LINN.)........ 460
Scrophulariaceae 459
Scuria RAF................... 105
Scutellaria LINN............... 447
Scutellaria ambigua NUTT.... 447
Scutellaria galericulata LINN... 447
——*lateriflora* LINN......... 448
——*parvula* MICHX.......... 447
Scytophyllum S. and Z........ 348
Selatium G. DON.............. 418
Selotinus OERST.............. 489
Selunia ALEF................. 315
Selwynnia F. MULL........... 251
Semidopsis ZUM.............. 189
Semeiocardium HASSK........ 338
Senecillis GAERTN............ 554
Senecio BAILL................ 553
Senecio LINN.................. 553
——*atriplicifolius* (LINN.).... 555
Senecio atriplicifolius var. reniformis HOOK.............. 555
Senecio aureus LINN........... 556
Senecio aureus var. balsamitae T. and G.............. 557
Senecio aureus var. gracilis HOOK................ 557
Senecio aureus var. *obovatus* (MUHL.)............. 557
——*aureus* var. *pauperculus* (MICHX.)............. 556
Senecio aureus UPH........... 556
——balsamitae MUHL....... 557
——ciliatus WALT.......... 558
——elliottii T. and G........ 557
——fastigiatus SCHWEIN.... 556
——gracilis PURSH.......... 556
——hieracifolia LINN....... 553
Senecio integerrimus NUTT..... 556
Senecio integrifolius var. heterophyllus NUTT...... 556
Senecio lugens RICH............ 555
Senecio lugens var. hookeri EAT................ 555
——lugens var. parryi EAT.. 555
——obovatus MUHL......... 557
Senecio ovatus (WALT.)........ 555
——*palustris* (LINN.)......... 557
Senecio palustris var. congestus HOOK................ 557
——pauperculus MICHX..... 556
——plattensis NUTT........ 557
Senecio reniformis (MUHL.).... 555
——*tomentosus* MICHX....... 556
Senega DC.................... 338
——officinalis SPACH........ 339
Senna GAERTN............... 309
Senra CAV.................... 361
Septas LOUR.................. 473
Seymeria auriculata SPRENG. 468
Serrafalcus PARLAT.......... 84
Serapias repens CHAIX........ 172
Sericocarpus NEES............ 515
——asteroides BSP......... 524
——conyzoides NEES........ 524
Serpicula occidentalis PURSH. 46
——verticillata MUHL...... 46
Serratula compta DRYAND.... 504
——noveboracensis LINN.... 500
——praealta LINN.......... 500
——scariosa LINN........... 504
——spicata LINN............ 504
——squarrosa LINN......... 506
Sesleria NUTT................ 73
——dactyloides NUTT....... 73
Shepherdia NUTT............. 373
——argentea NUTT......... 373
Shortia dentata RAF......... 265
Shuttleworthia MEISSN....... 442
Sibbaldia LINN............... 293
Sicyoides TOURN............. 493
——angulata MOENCH...... 493
Sicyos LINN.................. 493
Sicyos acutus RAF............ 493
Sicyos angulatus LINN......... 493
Sicyos lobatus MICHX......... 493
Sida dioica CAV.............. 361
Sieberia SPRENG.............. 165
Sieversia WILLD.............. 299
Sigillaria RAF................ 152
Silenaceae 219
Silene LINN.................... 219
——*alba* MUHL............... 220
——*antirrhina* LINN.......... 220
Silene catesbaei WALT........ 220
——coccinea MOENCH....... 220
——nivea DC............... 220
Silene stellata (LINN.).......... 221
——*virginica* LINN.......... 220
Siliquaria FORSK.............. 269
Silphium BAILL............... 531
Silphium LINN................ 531
Silphium conjunctum WILLD. 531
——erythrocaulon BERNH... 531
——gummiferum ELL....... 532
——hornemanni SCHRAD.... 531
Silphium integrifolium MICHX. 532

Silphium integrifolium var. laeve T. and G........ 532
Silphium laciniatum Linn..... 532
Silphium laevigatum Pursh.. 532
Silphium perfoliatum Linn.... 531
Silphium scabrum Moench... 531
——speciosum Nutt........ 532
——spicatum Poir.......... 532
Silphium terebinthinaceum Jacq. 532
Silphium tetragonum Moench 531
Siphisia Raf. 201
——glabra Raf. 202
——sipho Klotzsch 202
Sisarum Tausch....... 394
Sisarum Tourn............. 396
Sismondea Delpon.......... 160
Sison canadense Linn........ 397
——marginatum Michx.... 391
——trifoliatum Michx. 392
Sisymbrella Spach.. 257
Sisymbrium Linn............ 257
Sisymbrium arabidioides Hook 265
——brachycarpum H. and A. 258
——californicum Wats..... 258
——canescens Benth.. 258
——canescens var. brachycarpum Uph............ 258
——canescens Nutt........ 258
——canescens var. brevipes T. and G. 258
——dentatum Torr........ 258
Sisymbrium hartwegianum Fourn. 258
Sisymbrium hispidum Poir... 259
——humifusum J. Vahl... 265
——incisum var. hartwegianum Wats.......... 258
Sisymbrium multifidum (Pursh) 258
Sisymbrium nasturtium Walt. 261
——palustre Leys......... 260
——pinnatum Greene..... 258
——sophia Gray........... 258
Sisyrinchium Linn.......... .. 161
Sisyrinchium anceps Cav..... 162
——angustifolium Auct. in part 161
Sisyrinchium angustifolium Mill 162
Sisyrinchium bermudiana Michx............... 162
——gramineum Lam........ 162
Sisyrinchium mucronatum Michx 161
Sitanion Raf................. 87
——elymoides Raf.......... 87
Sitocodium Salisb........ ... 151
Sium Linn.................. 396
——*angustifolium* Linn...... 396
Sium canadense Lam......... 397
Sium cicutaefolium K. C. Gmel.. 396
Sium (?) douglasii DC......... 395
——latifolium Bigel. 396
——lineare Michx......... 396
Sium pumilum Nutt......... 396
——rigidius Linn. 391
——rugosum Raf 396
——suave Walt 396
——tenuifolium Muhl...... 396
Skottitzia Hassk... 136
Smilacina Desf. 152
——bifolia Desf 152
——bifolia var. canadense Gray....... 152
——borealis Pursh 151
——canadense Pursh...... 152
——ciliata Pursh.......... 154
——racemosa Desf 154
—— stellata Desf.......... 153
Smilacina trifolia Desf...... 153
Smilax Linn................. 157
Smilax aspera DC............ 158
——caduca Linn........... 158
——ciliata Steud 158
Smilax echirrata Wats 158
Smilax grandifolia Buckl . 157
Smilax herbacea Linn......... 158
Smilax herbacea var. pulverulenta Gray........... 158
——herbacea var. pulverulenta (Michx.)........ 159
Smilax hispida Muhl......... 157
Smilax peduncularis Muhl... 158
——pulverulenta Michx.... 158
——quadrangularis Muhl.. 158
Smilax rotundifolia Linn...... 158
Smilax rotundifolia Willd... 157
Smyrnium aureum Linn...... 392
——barbinode Muhl. 393
——cordatum Walt........ 393
——integerrimum Linn. ... 395
——luteum Muhl........ ... 392
——nudicaule Pursh........ 390
——trifoliatum Muhl...... 393
Solanaceae 456
Solanites...................... 456
Solanum Linn.. 458
Solanum crenato-dentatum DC 459
Solanum nigrum Linn 459
Solanum pterocaulon DC..... 459
——ptycanthum DC......... 459
Soleirolia Gaudich...... 199
Solenachne Steud........... 69
Solenostigma Endl..... 194
Solidago Kuntze.... 516
Solidago Linn................. 508
Solidago altissima Ait........ 512
——altissima T. and G...... 512
——amplexicaulis Mart.... 509
——angulata Spreng....... 512
——arguta T. and G........ 512
——arguta var. juncea Gray 512
——aspera Ait.............. 512
——asperata Pursh.. 512
——asperata Soland........ 512
——asperula Desf.......... 512
Solidago caesia Linn...:.... .. 514
——*canadensis* Linn. 510

Solidago ciliaris Muhl 512
——cinerascens Schwein 509
——conferta Poir 509
——decemflora DC 509
——decemflora Gray 509
——erecta Pursh 513
——flexicaulis Linn. 513
——flexicaulis var. latifolia Willd 513
——flexicaulis Linn. *herb.* 514
——fragrans Desf 511
——frankii Hochst. and Steud 512
——gigantea Ait 511
——gigantea Willd 511
——glaberrima Mart 511
——glabra Desf 511
Solidago graminifolia (Linn.) 508
Solidago grandiflora Raf 509
——hirta Willd 512
Solidago hispida Muhl 509
——humilis Desf 512
——incana T. and G. 510
Solidago juncea Ait 512
Solidago lanceolata Cham. and Schlecht 508
——lanceolata Linn 508
——lateriflora Linn 519
Solidago latifolia Linn 513
Solidago longifolia Schrad. 510
——macrophylla Bigel 513
Solidago missouriensis Nutt 511
Solidago mollis Bartl 510
Solidago neglecta T. and G. 512
——*nemoralis* Ait 509
Solidago nemoralis var. incana Gray 510
Solidago nemoralis var. *mollis* (Bart.) 510
Solidago nutans Desf 510
Solidago occidentalis Nutt 508
——*patula* Muhl 512
Solidago petiolaris Muhl 513
——pitcheri Nutt 511
——puberula DC 509
Solidago radula Nutt 509
Solidago reflexa Ait 510
Solidago riddellii Frank 509
——*rigida* Linn 509
Solidago rigidula Bosc 512
——rotundifolia DC 509
Solidago rugosa Mill 512
Solidago scaberrima T. and G. 509
——sempervirens Michx 513
Solidago serotina Ait 511
Solidago serotina var. *gigantea* (Ait.) 511
Solidago serotina Hook 511
——serotina Willd 511
Solidago speciosa Nutt 513
Solidago speciosa var. angustata T. and G. 513
Solidago speciosa var. *erecta* (Pursh) 513
Solidago speciosa var. *rigidiuscula* T. and G. 513
Solidago villosa Pursh 512
Solomonia Lour 338
Sonchus acuminatus Bigel 560
——biennis Moench 560
——floridanus Ait 560
——floridanus Linn 561
——leucophaeus Willd 560
——ludovicianus Nutt 561
——multiflorus Desf 560
——pallidus Torr 560
——pallidus Willd 562
——pulchellus Pursh 561
——sibiricus Rich 561
——spicatus Lam 560
Sondera Lehm 272
Sophora tinctoria Linn 311
Sophorocapnos Turcz 254
Sophronanthe Benth 464
Soranthus Led 390
Sorbus Linn 283
——arbutifolia Wenz 284
——aucuparia Schrank 283
——aucuparia var. B. Michx 283
——coronaria MacM 284
——sambucifolia Roem 284
——sitchensis Roem 284
Sorbus Tourn 283
Sorghum Pers 47
——nutans Gray 48
Sorostachys Steud 90
Souza Velloz 161
Soyeria Monn 567
Spallanzania Poll 302
Spanioptilon Less 558
Sparganiaceae 32
Sparganium Linn 32
——*androcladum* (Englm.) 33
Sparganium erectum Wahl 32
——erectum var. B. Linn 32
Sparganium eurycarpum Englm 33
Sparganium ramosum Auct. 33
Sparganium simplex Huds 33
Sparganium simplex var. androcladum Englm. 33
——simplex var. nuttallii Engelm 32
Spartina Schreb 69
——*cynosuroides* (Linn.) 69
Spartina polystachya Muhl. 170
Spathyema Raf 131
——*foetida* Linn 131
Spatularia Haw 274
Specularia Heist 496
——perfoliata DC 496
Speculum Hall 496
Spergulastrum Michx 221
——gramineum Michx 222
Spermachiton 62
Spermatura Reich 398
Spermodon Beauv 104
Sphaerochloa Beauv 136
Sphaeropus Boeckl 105

Sphaeroschoenus NEES....... 104
Sphaerostigma ENDL.......... 381
Sphenocleaceae MART........ 494
Sphondylium TOURN.......... 389
Spiesia NECK 322
Spiesia lamberti (PURSH)...... 323
——*splendens* (DOUGL.)...... 322
Spiloxene SALISB............. 159
Spiraea LINN................. 282
Spiraea amoena RAF.......... 282
——caroliniana MARSH..... 281
——carpinifolia WILLD...... 282
——ciliata RAF.......... 282
——ferruginea RAF.......... 282
——glomerata RAF......... 282
——obovata RAF............ 282
——opulifolia LINN.......... 281
——rosea RAF.............. 282
Spiraea salicifolia LINN........ 282
——*tomentosa* LINN.......... 282
Spiraea tomentosa var. alba MARSH............... 282
Spiranthes L. C. RICH......... 170
——cernua RICH............ 170
——gemmipara LINDL...... 171
——gracilis BIGEL 170
——romanzowiana CHAM.... 171
Spirillus J. GAY.............. 33
Spirodela SCHLEID........... 133
——polyrhiza SCHLEID..... 134
Splitgerbera MIQ............ 198
Sporobolus R. BR............. 62
——*asper* (MICHX.).......... 64
——*cryptandrus* (TORR.)..... 62
——*cuspidatus* (TORR.) 63
——*depauperatus* (TORR.).... 63
——*heterolepis* GRAY......... 62
——*junceus* (MICHX.)........ 63
——*vaginaeflorus* (TORR.) ... 63
Sportella HANCE............ 287
Stachys LINN. 445
Stachys arvensis WALT....... 445
Stachys aspera MICHX......... 445
Stachys foeniculum PURSH... 449
——hispida PURSH.......... 445
Stachys palustris LINN......... 445
Stachys palustris var. aspera GRAY................ 445
Staphylea LINN.............. 350
——*trifolia* LINN........... 350
Staphyleaceae............. 350
Staphylodendron TOURN..... 350
——trifoliatum MOENCH ... 350
Staphysagria SPACH.......... 234
Starkea pinnata NUTT........ 514
Staurogeton trisulcus SCHUR. 133
Steganotaenia HOCHST....... 390
Steironema RAF.............. 413
——*ciliatum* (LINN.)......... 414
——*lanceolatum* var. *hybridum* (MICHX.)............ 413
Steironema longifolia RAF... 413
Steironema quadriflorum (SIMS.) 413
Stellaria LUDW............... 345
Stellaria verna (LINN.) 345
Stellaria vernalis WIGG....... 345
Stellaria B. and H............ 221
——biflora PURSH 224
——borealis var. B.......... 221
——crassifolia EHRH........ 221
——crassifolia WATS........ 222
——glauca MEY 222
——graminea BIGEL........ 222
——longifolia MUHL........ 222
——longifolia ROTH........ 222
——longipes GOLDIE........ 222
Stellariaceae............... 334
Stellularia LINN.............. 221
——*crassifolia* (EHRH.)...... 221
Stellularia longifolia (MUHL.).. 222
——*longipes* (GOLDIE)....... 222
Stenactis NEES.............. 525
——ambigua DC.......... 526
——annua DC.............. 527
——dubia CASS............ 527
——strigosa DC............ 527
Stenanthium A. GRAY........ 144
Stengelia SCH.-BIP........... 499
Stenocephalum SCH.-BIP..... 499
Stenophragma CLARK........ 257
Stenorrhyncus L. C. RICH ... 170
Stenosiphon SPACH.......... 376
Stenotaenia BOISS............ 389
Stenotheca MONN............ 568
——venosa MONN. 569
Stenotus NUTT............ 514
Stephanandra S. and Z........ 281
Steptoramphus BUNGE. 560
Sterculiaceae BAILL.......... 360
Sterigmanthe KL. and G.. ... 341
Stevenia AD. and FISCH 265
Stilaginaceae LINDL.......... 340
Stilpnogyne DC............ 554
Stilpnopappus DC........... 499
Stipa LINN.................. 57
Stipa canadensis POIR 58
——juncea MICHX........... 58
Stipa spartea TRIN.......... 57
Stipagrostis NEES. 56
Stooria NECK................ 497
Strateuma SALISB............ 164
Strebanthus RAF............. 388
Streblochaeta HOCHST........ 69
Streptachne HBK............. 56
Streptachne R. BR 57
Streptostachys DESVX........ 49
Strobocalyx SCH.-BIP......... 499
Strophades BOISS............ 268
Strophiostoma TURCZ......... 439
Strophis SALISB.............. 160
Strophopappus DC............ 499
Strophostyles ELL 312
——angulosa ELL........... 312
——pauciflorus S. WATS.... 312
Sturmia REICH.............. 173
——loeselii REICH.......... 173
Stylandra NUTT............ 423
Stylipus RAF................ 299

Stylopappus NUTT 564
Styphonia NUTT.. 345
Styrandra RAF............... 152
—— bifolia RAF.... 152
Succuta DESM................ 429
Sufrago GAERTN.............. 499
Swantia ALEF 315
Symphachne BEAUV 136
Symphoria PERS.............. 483
——conglomerata PERS..... 485
——occidentalis R. BR..... 484
——racemosa PERS.......... 483
Symphoricarpa NECK......... 483
Symphoricarpos JUSS.......... 483
Symphoricarpos elongata PRESL.......... 484
——glomerata PURSH....... 485
——heterophylla PRESL..... 484
Symphoricarpos occidentalis (R. BR.).............. 484
Symphoricarpos orbiculatus MOENCH............. 485
——parviflora DESF......... 485
Symphoricarpos racemosus MICHX................ 483
——*racemosus* var. *pauciflorus* ROBB 484
——*symphoricarpos* (LINN.).. 485
Symphoricarpos vulgaris MICHX........... 485
Symphyandra A. DC.......... 494
Symphyostemon KL 270
Symphyotrichum NEES....... 515
Symplocarpus SALISB......... 131
——foetidus SALISB......... 131
Synaedrys LINDL...... 190
Synanthereae RICH. 499
Synassa LINDL 170
Syndesmon HOFFMNSGG...... 235
——thalictroides HOFFMGG. 235
Syneilesis MAX.............. 554
Synmeria GRAH.............. 165
Syntherisma WALT........... 49
Synthyris BENTH............. 467
——*houghtoniana* BENTH 467
Syorhynchium HOFFM........ 161
Syrmatium VOG............ .. 331

T

Taeniopetalum BUNGE....... 390
Taeniostema SPACH.......... 364
Tagetes BAILL 548
——papposa VENT.......... 549
Talinum ADANS.............. 218
Talinum ciliatum WALP...... 218
Talinum teretifolium PURSH.... 218
Taraxacum HALL........ 562
Taraxacum dens-leonis DESF.. 563
——officinale WEBB.......... 563
Taraxacum taraxacum (LINN.). 563
Taraxia NUTT 381
Teichostemma R. BR......... 499
Telmatophace SCHLEID....... 133
——orbicularis SCHUR....... 134
Telmatophace polyrhiza GODR 134
Teloxys MOQ................. 211
Tenagia REICH............... 138
Tephis ADANS................ 204
Tephroseris SCHUR........... 553
Tephrosia PERS.............. 327
——virginiana PERS........ 328
Tephrothamnus SCH.-BIP.... 499
Terebinthaceae BAILL........ 345
Terobera STEUD............. 103
Terranea COLLA.............. 525
Tetragonoloba SCOP.......... 331
Tetrahitum HOFFM. and LINK 445
Tetramolopium NEES.... .. 525
Tetratelaia SOND............ 270
Tetrodus CASS 547
Teucrium LINN.............. 455
——*canadense* LINN......... 455
Teucrium virginicum LINN... 455
Thacla SPACH................ 230
Thalasium SPRENG........... 49
Thalictrum LINN............. 248
Thalictrum anemonoides MICHX. 235
——carolinianum WALT.... 235
——cornuti T. and G........ 249
Thalictrum dioicum LINN...... 249
Thalictrum laevigatum MICHX................ 249
——polygamum *Coll. Nom.*. 249
Thalictrum purpurascens LINN. 249
Thalictrum revolutum DC.... 249
——rugosum AIT........... 249
Thaspium NUTT.............. 392
——*aureum* (LINN.)..... 392
Thaspium aureum var. apterum GRAY........... 394
Thaspium aureum var. *cordatum* (WALT.)........... 393
Thaspium aureum var. trifoliatum C. and R. 393
Thaspium barbinode (MICHX.).. 393
Thaspium cordatum T. and G. 393
——trifoliatum GRAY 393
——trifoliatum var. apterum GRAY............ 393
Thaumuria GAUDICH....... .. 199
Thelaia ALEF................ 403
Thelypodium ENDL............ 256
——*pinnatifidum* (MICHX.) . 256
Thelysia SALISB.............. 160
Theopyxis GRIS............... 412
Thesium corymbulosum MICHX............... 200
——umbellatum LINN 200
Thlaspi tuberosum NUTT..... 262
——virginianum POIR....... 257
Thrasya HBK................ 49
Thylax fraxineum RAF....... 337
Thymelaeaceae............. 372
Thymophylla LAG............ 548
Thymus virginicus LINN..... 452
Thyrsanthus SCHR........... 412
Thysanella GRAY............. 204

Thysselinum Hoffm. 390
Tiarella Linn. 275
——*cordifolia* Linn. 275
Tiarella laciniata Hook. 275
Tiedemannia DC. 391
——*rigida* (Linn.) 391
Tilia Linn. 359
——*americana* Linn. 359
Tilia canadensis Michx. 359
——caroliniana Mill. 359
——glabra Vent. 359
——latifolia Salisb. 359
——neglecta Spach. 359
——pubescens Nouv. Duham 359
——stenopetala Raf. 359
Tiliaceae 359
Timbalia Clos 287
Tinea Biv 165
Tinus Oerst 489
Tithymalopsis Kl. and G. 341
Tithymali Adans. 340
Tithymalus Gaertn 341
Tobinia Desvx 337
Tofieldia Huds 143
——*glutinosa* (Michx) 144
Tommasinia Bert 390
Tonguea Endl 257
Tordyliopsis DC 389
Tordylium Baill 389
Tormentilla Linn 293
Torminalis Med 283
Torminaria Roem 283
Torresia R. and P. 55
Torreya Raf 90
Torulinum Desv 91
Tosagris Beauv 58
Tovara Adans 204
Tovaria Neck 152
Toxicodendron Tourn. 346
——pinnatum Mill. 346
Tozzettia Savi 61
Trachylomia Nees 105
——triglomerata Nees 105
Trachynotia Michx 69
——cynosuroides Michx 69
——polystachya Michx 69
Trachyrhynchium Nees 103
Tradescantia Linn 136
Tradescantia cristata Walt. 137
——ohioensis Raf 137
Tradescantia virginica Linn. 137
Tragacantha Tourn 323
(Tragacantha) 308
Tragium Spreng 394
Tragopogon virginicum Linn. 564
Tragopsis Pomel 394
Tragoselinum Pomel 394
Trasi Beauv 103
Traversia Hook. f. 554
Traunsteinera Reich 164
Treissia Haw 341
Trentepohlia Boeckl 90
Triachyrum Hochst 62
Triadenia Spach 362
Triadenum purpurascens Raf. 364
Triaena HBK. 70
Triantha Nutt 143
Triathera Desvx 70
Trichachne Nees 49
Tricherostigma Kl. and G. 341
Trichochaeta Steud 104
Trichochloa Beauv 58
——calycina Trin 60
——glomerata Trin 60
Trichocrepis Vis 568
Trichodium Michx 64
——decumbens Michx 65
——laxifolium Michx 65
——perennans Ell. 65
——scabrum Muhl 65
Tricholaena Schrad. 49
Trichoon Roth 73
Trichophorum Pers 94
——cyperinum Pers 96
——lineatum Muhl. 96
Trichopodium Presl 329
Trichostemma brachiatus Linn 456
Trichostylis Lestib 103
Trichothalamus Lehm 293
Triclinium odoratum Raf 388
Triclisperma Raf 338
——grandiflora Raf. 339
Tricoccae Linn 340
Tricolophus Spach 338
Tridia Korth 362
Trientalis Linn 414
——*americana* (Pers.) 414
Trientalis europaea Michx 414
——europaea var. americana Pers 414
——europaea var. angustifolia Torr 414
Triglochin Linn 41
Triglochin chilensis Mey 41
——elata Nutt 41
——juncea Gilib 41
Triglochin maritima Linn. 41
Triglochin maritima var. elata Gray 41, 42
——mexicana HBK 41
Triglochin palustris Linn 41
Triglochin salina Wallr. 41
Trigonea Parlat 147
Trigonella americana Nutt 332
Trigonosciadum Boiss 389
Trigueria Cav 361
Trillidium Kunth 156
Trillium Linn 156
Trillium album Pursh 156
——camtschaticum Pursh. 156
Trillium cernuum Linn 156
——*erectum* Linn 156
Trillium erectum var. declinatum Gray 156
Trillium grandiflorum (Michx.) 156
——*nivale* Ridd. 156
Trillium pendulum Ait 156

Trillium pendulum MUHL.. 156
Trillium sessile LINN.......... 157
——*recurvatum* BECK 157
Trillium rhomboideus var. grandiflorum MICHX.. 156
Trilophos FISCH............. 251
Trimeris PRESL.......... ... 497
Trimorphoea CASS........... 525
Triniusa STEUD............. 84
Triodanis RAF............... 496
Triodia festucacea EICHW ... 80
Trionum MED............... 361
Triosteum LINN.. 487
Triosteum majus MICHX..... 487
Triosteum perfoliatum LINN. .. 487
Tripetalus LINDL........... 487
Triphora NUTT....... 169
Triplathera ENDL........... 70
Triplima RAF 105
Tripolium NEES....... 515
Tripterium SPACH......... ... 248
Triraphis NEES......... 69
Trisetum purpurascens TORR. 68
Triticum caninum LINN...... 85
——repens var. glaucum VAS 86
——sepium LAM 85
——violaceum HORN.... ... 86
Trewiaceae LINDL...... 340
Trixago MOENCH. 445
Troilia LINK................. 315
Trollius BAILL.............. 230
Tropaeolum BENTH. and HOOK 332
Troximon AUCT 563, 564
——cuspidatum PURSH..... 563
——glaucum PURSH 564
——marginatum NUTT...... 563
Tuamina ALEF.......... ... 315
Tuberaria DUN. 364
Tubopadus POMEL........... 306
Tuckermannia NUTT. 543
Tullia LEAVENW 452
Tuna DILL. 371
Tupa G. DON............ 497
Turczaninowia DC........... 515
Turpinia LLAV. and LEX..... 500
Turpinia RAF 345
Turritis LINN............... 265
——glabra LINN 266
——hirsuta LINN.... 267
——hiruta MUHL......... .67
——laevigata MUHL 267
——lyrata RAF............. 266
——macrocarpa NUTT ... 266
——oblongata RAF 267
——ovata PURSH 267
Tussaca RAF............... 171
——repens RAF 172
Tylomium PRESL....... 497
Tylothrasya DOELL.......... 49
Tynarthron CAS...... 553
Typalia DENTS............ ... 337
Typha LINN.... 31
Typha angustifolia RICH..... 31
Typha latifolia LINN...... 31
Typha latifolia var. elongata DUDL............ 31
——major CURT. 31
Typhaceae........ 31
Typhodes MOENCH 54
——arundinacea MOENCH... 55
Tytonia DON................. 351

U

Udora NUTT................. 45
——canadensis NUTT. 46
——occidentalis KOCH 46
Ulmaceae 192
Ulmaceae ENDL 192
Ulmiphyllum 193
Ulmus LINN................. 193
Ulmus alba RAF.......... ... 193
Ulmus americana LINN........ 193
Ulmus americana var. aspera CHAP... 193
——americana var. bartramii WALP................. 193
——americana var. pendula AIT.................. 193
——americana var. rubra AIT. 194
——americana var. scabra SPACH........ 193
——americana LINN. herb. BANKS............... 194
——americana PLANCH..... 193
——crispa WILLD. 194
——floridana CHAP......... 193
Ulmus fulva MICHX. 194
Ulmus mollifolia MARSH..... 193
——pendula WILLD.... 193
——pubescens WALT........ 194
Ulmus racemosa THOS..... ... 193
Ulmus rubra MICHX f 194
Uloptera FENZL............. 390
Ulostoma G. DON............ 418
Umbelliferae 387
Unifolium ADANS. 152
Unifolium canadense (LINN). 152
Unifolium bifolium (LINN.) ... 152
——*racemosum* (LINN.)...... 154
——*stellatum* (LINN.)........ 153
——*trifolium* (LINN.)........ 153
Unisema RAF........... . 137
Urachne TRIN............ 57
——asperifolia TRIN 58
——brevicaudata TRIN..... 58
——leucosperma LINK..... 58
——racemosa TRIN... .. . 58
Uraspermum NUTT.......... 398
——aristatum OK 398
——aristatum var brevistyle OK. 398
——claytoni NUTT.... 398
——hirsutum BIGEL........ 398
Urochloa BEAUV...... 49
Urochloa KUNTH............ 49
Urtica LINN...... 196
Urtica canadensis LINN....... 197

Urtica capitata Pursh....... 199
——cylindrica Linn......... 198
——dioica Michx........... 197
——dioica var. procera Wedd 197
——divaricata Pursh....... 197
——fasciculata Poir....... 198
Urtica gracilis Ait. 197
Urtica procera Pursh......... 197
——pumila Linn....... 198
——whitlowi Muhl......... 197
Urticaceae................ 196
Urticaceae B. and H........192, 195
Urticastrum Moehr.......... 197
Urticeae.......... 196
Utricularia Linn............. 473
——*cornuta* Michx.......... 474
Utricularia estacea Hook..... 474
Utricularia intermedia Hayne. 474
Utricularia millefolium Nutt 474
Utricularia minor Linn........ 474
Utricularia personata Le Conte................ 474
Utricularia vulgaris Linn...... 474
Utriculariaceae Baill........ 473
Uvedalia R. Br.............. 463
Uvularia Linn............... 146
——*grandiflora* Sm.......... 146
Uvularia lanceolata Willd... 146
Uvularia perfoliata Linn...... 146
Uvularia perfoliata var. major Michx............ 146
——perfoliata var. minor Michx..... 146
Uvularia sessilifolia Linn...... 146
Uwarowia Bunge............ 442

V

Vacciniaceae Lindl.......... 405
Vaccinium Linn........ 409
Vaccinium album Lam....... 410
——album Linn............ 486
——album Pursh........... 411
——amoenum Ait........... 410
Vaccinium canadense Kalm.... 410
——*corymbosum* var. *amoenum* (Ait.)........... 410
Vaccinium corymbosum var. fuscatum Hook....... 410
——elevatum Dun.......... 411
——elongatum Wats........ 410
——grandiflorum Wats.... 410
——hispidulum Linn....... 407
——humile Willd......... 410
——kunthianum Kl......... 411
——macrocarpon Ait....... 409
——marianum Wats......... 410
——multiflorum Wats...... 411
——myrtilloides Michx..... 410
——oxycoccus Linn......... 409
——oxycoccus var. oblongifolius Michx......... 409
Vaccinium pennsylvanicum Lam 410
Vaccinium ramulosum Willd 410
Vaccinium stamineum Linn.... 411
Vaccinium tenellum Pursh 411
Vahlodia Fries............... 67
Valeriana Linn........... 491
Valeriana ceratophylla MacM 492
——ciliata T. and G......... 491
Valeriana edulis Nutt......... 491
Valeriana radiata Willd..... 492
Valerianaceae............. 491
Valerianella Moench......... 492
——*chenopodifolia* (Pursh).. 492
——*radiata* (Willd.)........ 492
Valerianites Sap............... 49
Vallisneria Linn..... 46
Vallisneria americana Michx. 46
——bulbosa Poir........... 44
——jacquiniana Eichw..... 46
——jacquinii Savi.......... 46
Vallisneria spiralis Linn...... 46
Vallisneria spiralis var. americana (Michx.)........ 46
Vanillosma Sch.-Bip.......... 499
Varasia Phil................. 418
Vaseya Thurb..... 58
Velarum Schur............. 257
Veratrum Linn.............. 145
Veratrum album Michx 145
——album var. eschscholtzii Dawson 145
——album var. viridis Regel 145
——eschscholtzii Gray 145
Veratrum viride Ait. 145
Verbena Linn................ 442
——*angustifolia*............. 444
——*bracteosa* Michx........ 443
——*bracteosa* X *stricta* Uph.. 443
Verbena canescens Chap. 443
——cuneifolia Raf. 443
Verbena hastata Linn........ 443
Verbena hastata var. pinnatifida Pursh......... 443
——paniculata............. 443
——rigens Michx.......... 443
——rugosa Willd.......... 444
——simplex Lehm.......... 444
——squarrosa Roth......... 443
Verbena stricta Vent.......... 443
Verbena urticaefolia Linn.... 444
Verbenaceae............... 442
Vernix Adans............... 346
Vernonella Sond............. 499
Vernonia Schreb............ 499
Vernonia altissima DC 500
——corymbosa Schwein.... 500
Vernonia fasciculata Michx ... 500
——*noveboracensis* (Linn.)... 500
Vernonia praealta Hook...... 500
——tomentosa Ell 500
Veronica Linn.............. 465
——*americana* Schwein..... 466
Veronica anagallis Bong..... 466
Veronica anagallis Linn....... 466
Veronica beccabunga Auct .. 466
——caroliniana Walt....... 465
——intermedia Schw....... 466

Veronica marilandica Murr.. 465
Veronica peregrina Linn 465
——*scutellata* Linn......... 466
Veronica sibirica Linn....... 467
Veronica virginica Linn....... 467
Veronica xalipensis HBK..... 465
Veronicites Heer 465
Vesalea Mart. and Gal...... 483
Vesicaria Auct. Am......... 263
——globosa Desvx......... 263
——ludoviciana DC......... 263
Vetiveria Thou............. 47
Viburnum Linn.. 489
——*dentatum* Linn.......... 490
Viburnum dentatum var. glabellum Michx........ 490
——dentatum var. lucidum Ait..... 490
——dentatum var. pubescens Ait.................. 489
——edule Hook............. 489
Viburnum lentago Linn........ 490
Viburnum opuloides Muhl.. 489
Viburnum opulus Linn........ 489
Viburnum opulus var. americanum T. and G...... 489
——oxycoccus Pursh....... 489
Viburnum pubescens (Ait.)..... 489
Viburnum rafinesquianum R. and S. 489
——subtomentosum Michx. 489
——trilobum Marsh....... 489
——villosum Raf.......... 489
Vicia Linn.................. 315
——*americana* Muhl........ 316
——*caroliniana* Walt....... 316
——*cracca* Linn......... 316
Vicia oregana Nutt.......... 316
——parviflora Michx...... 316
——sparsifolia Nutt....... 316
——sylvatica Nutt......... 316
——tridentata Schw....... 316
Vicilla Schur............... 315
Vicioides Moench......... 315
Vigiera Velloz.... 375
Vigineixia Pom...... 567
Vignantha Schur........... 106
Vignea Beauv.............. 106
——aquatilis Reich......... 123
——canescens Reich........ 110
——chordorhiza Reich 116
——persoonii Schur........ 111
——stenophylla Reich 115
——teretiuscula Reich...... 114
Vilfa Adans............. .. . 64
Vilfa Beauv 62
——aspera Beauv 64
——cryptandra Trin........ 62
——cuspidata Torr......... 63
——depauperata Torr...... 63
——heterolepis Gray....... 62
——hookeri Trin.......... 64
——juncea Trin.......... . 63
——longifolia Torr........ 64
Vilfa utilis Torr............ 63
——vaginaeflora Torr...... 63
Villanova Ort........... 533
Villarsia Gmel............... 418
——cordata Ell........... 418
——lacunosa Vent... 418
Vincentia Gaudich.......... 103
Viola Linn. 366
Viola acuta Bigel 368
——albiflora Link.......... 367
——allegheniensis R. and S. 369
——amoena Leconte... ... 368
——asarifolia Pursh........ 369
——attenuata Sweet....... 368
——barbata Muhl.......... 370
Viola blanda Willd.. 368
——*blanda* var. *amoena* (Leconte)............... 368
Viola blanda var. palustriformis Gray........... 368
Viola canadensis Linn......... 367
Viola canina var. muhlenbergii Trautv........ 366
——canina var. sylvestris Reg................. 366
——ciliata Muhl 369
——ciliata R. and S........ 370
——clandestina Pursh...... 368
——cordata Walt.......... 370
——cucullata Ait.......... 369
——cucullata var. cordata Gray............... 370
——cucullata var. palmata Gray................ 369
——debilis Michx.......... 366
——debilis Pursh.......... 366
——delphinifolia Nutt. ... 370
——dentata Pursh......... 369
——digitata Pursh......... 370
——heterophylla Muhl..... 369
Viola lanceolata Linn.......... 368
Viola lewisiana Ging......... 366
——muhlenbergiana Ging 366
——muhlenbergii Torr..... 366
——obliqua Hill........... 369
——obliqua Pursh......... 368
——ochroleuca Schw....... 366
——ovata Nutt............ 369
Viola palmata Linn......... ... 369
——*palmata* var. *cordata* (Walt) 370
Viola palmata var. cucullata Gray... 369
Viola palmata var. *obliqua* (Hill)................ 369
Viola papilionacea Pursh.... 369
Viola pedata Linn. 370
——*pedatifida* G. Don........ 370
Viola pennsylvanica Michx .. 367
——pinnata Rich.......... 370
Viola primulaefolia Linn...... 368
Viola pubescens Ait........... 367
——*rotundifolia* Michx...... 367
Viola sagittaefolia Salisb.... 369

Viola sagittata Ait 369
Viola sororia Willd 370
Viola striata Ait 366
——*sylvestris* Lam 366
Viola uliginosa Muhl 366
——uniflora var. pubescens Reg 367
——villosa Walt 370
Violaceae 365
Viorna Pers 240
Virga-aurea Tourn 508
Virgilia L'Her 547
Virgularia R. and P 468
Viscum terrestris Linn 413
Vitaceae 357
Viticella Mitch 434
Viticella Moench 240
Vitis Linn 358
——aestivalis Michx 358
——cordifolia Lam 359
Vitis cordifolia var. riparia Gray 358
——hederacea Ehrh 357
——incisa Jacq 358
——intermedia Muhl 358
——labrusca Walt 358
——labruscoides Muhl 358
——laciniosa Marsh 358
——odoratissima Don 358
——palmata Vahl 358
——quinquefolia Michx 357
Vitis riparia Michx 358
Vitis virginiana Poir 358
——vulpina Linn 358
——vulpina var. cordifolia Regel 359
——vulpina Jacq 358
——vulpina Muhl 359
Vitis-Idaea Tourn 410
Vitmannia Turra 216
Vittadinia A. Rich 525
Vivianaceae Lindl 332
Vleckia Raf 449
——*foenicula* (Pursh) 449
——*nepetoides* (Linn.) 450
——*scrophulariaefolia* (Willd.) 449
Voightia Roth 568
Volvulus Med 428
——*sepium* (Linn.) 428
——*spithameus* (Linn.) 428
Vosacan Adans 539
Vulpia Gmel 82
Vyenomus Presl 348

W

Waldschmidtia Wigg 418
Waldsteinia Willd 299
Wallia Alef 176
——cinerea Alef 177
——nigra Alef 177
Webbia DC 499
Webbia Spach 362
Weigela Thunb 486
Weigela Pers 486
Wendia Hoffm 389
Whitlavia Hook 435
Wiggersia Alef 315
Wikstromia Spreng 501
Wilhelmsia C. Koch 77
Willdenowa Cav 548
Willkommia Schultze 554
Woodvillea DC 525
Wolffia Hork 134
——brasiliensis Wedd 134
——columbiana Karst 135
Wulffia Neck 134

X

Xamachrista Raf 309
——trifolia Raf 309
Xanthidium Delp 534
Xanthium Linn 535
Xanthium americanum Walt 535
Xanthium canadense Mill 535
——*canadense* var. *echinatum* (Murr.) 536
Xanthium carolinense Dill 535
——echinatum Murr 536
——maculatum Raf 536
——macrocarpum var glabratum DC 535
——orientale Linn 535
——strumarium Auct. Am 535
——strumarium var. canadense T. and G 535
Xanthogalum Lall 390
Xantholinum Reich 335
Xanthoselinum Schur 390
Xanthoxylum *see* Zanthoxylum
——fraxinifolium Marsh 337
——mite Willd 337
Xeniatrum Salisb 151
Xenocarpus Cass 554
Xiphion Parlat 160
Xiphocarpus Presl 327
Xiphochaeta Poepp. and Endl 500
Xiphocoma Stev 241
Xipholepis Steetz 499
Xylanthena Neck 558
Xylococcus Nutt 408
Xylopleurum Spach 380
Xylorhiza Nutt 515
Xyloohiza Salisb 147
Xylosteum Tourn 485
——ciliatum Pursh 486
——ciliatum var. album Pursh 483
——tartaricum Michx 486
Xypherus Raf 311
Xyridaceae 135
Xyridion Klatt 160
Xyris Linn 135
Xyris bulbosa Kunth 135
Xyris flexuosa Muhl 135
Xyris jupicai Michx 135
——scabra Engelm 135
Xysmalobium R. Br 423

Y

Ymnostemma NECK.......... 497
Youngia CASS................ 567

Z

Zahlbrucknera REICH......... 274
Zanichellia LINN.............. 39
Zanichellia geniculata GILIB.. 39
——macrostemon G. W. L.. 39
——major BNGH............ 39
Zanichellia palustris LINN...... 39
Zanichellia radicans WALLM.. 39
——repens BNGH. 39
Zanthoxyleae ENDL........... 336
Zanthoxylum LINN............. 337
——*americanum* MILL...... 337
Zanthoxylum fraxineum WILLD................ 337
——ramifolium MICHX...... 337
——tricarpum HOOK........ 337
Zeocriton BEAUV............. 86
——secalinum BEAUV....... 87
Zerobotrys NUTT.............. 408
Zietinea GLED................. 445
Zigadenus MICHX............. 144
Zigadenus chloranthus RICH.. 144
Zigadenus elegans PURSH...... 144
Zigadenus glaucus HOOK...... 144
——virginicus KUNTH...... 145
Zizania LINN................ 53
——*aquatica* LINN........... 53
Zizania clavulosa MICHX...... 53
—— palustris LINN........... 53
Zizaniopsis DOELL. and ASCH. 53
Zizia KOCH................... 394
——*aurea* KOCH............. 394
——*cordata* KOCH........... 393
Zizia integerrima DC......... 395
Zosteraceae.................... 33
Zosterospermon BEAUV....... 104
Zygadenus *see* Zigadenus......